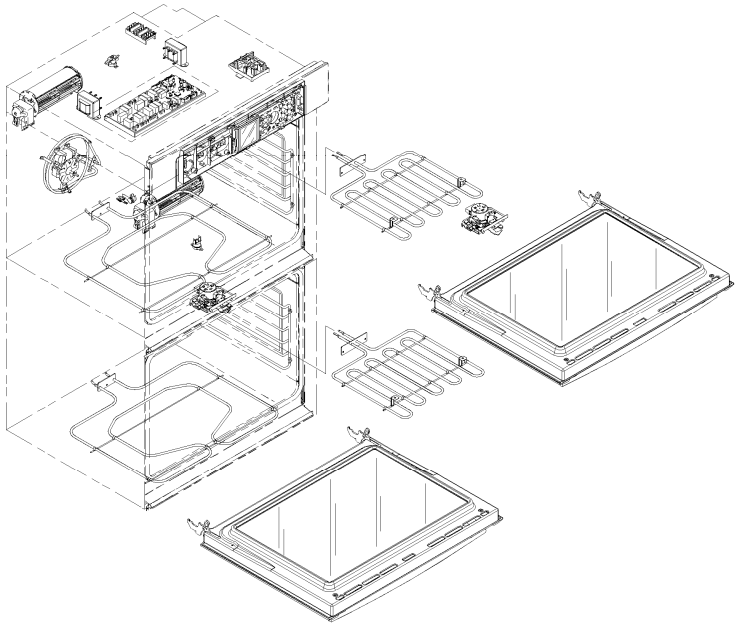
SERVICE MANUAL

for

BOSCH

300, 500, and 800 Series
Built-in Wall Ovens



Models:

HBL8x50UC, HBL57x0UC, HBL56x0UC, HBL54x0UC, HBL35x0UC, HBL33x0UC, HBN56x0UC, HBN54x0UC, HBN35x0UC, HBN34x0UC, HBN3350UC

This manual contains information that is necessary for servicing the following Bosch electric built-in wall ovens:

HBL8x50UC, HBL57x0UC, HBL56x0UC, HBL54x0UC, HBL35x0UC, HBL33x0UC, HBN56x0UC, HBN54x0UC, HBN35x0UC, HBN34x0UC, HBN3350UC

This manual is designed to be used by qualified service personnel only. Due to the complexity and the risk of high-voltage electrical shock, Bosch does not recommend that customers service their own units.

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1 GENERAL

There are nine HBL (30") and five HBN (27") models in various combinations and three colors (black, white, and stainless), included in the 2007 Bosch 300, 500, and 800 Series Built-in Wall Oven (BIWO) product line. These models include A (thermal), B (convection), and C (convection with ring element) oven cavities. Two in the series are combination models with microwaves – the HBL57x0UC (with HMB50x0 traditional microwave) and HBL8750UC (with HMB80x0 convection microwave).

The 800 series models are stainless steel and have a glass user interface (touch panel) with graphical displays. 500 series models are available in black, white, and stainless, and have ergonomic, retractable dials. The 300 series models, also available in three color options, have ergonomic dials. Fast preheat capability, 2-hour self-clean, telescopic racks, and up to 16 cooking modes are among the features offered.

The control panel and door skins on the stainless models are grade 304 stainless steel.

1.1 Models

27" Ovens

HBN56x0UC Double oven with thermal/true convection
HBN54x0UC Single oven with true convection
HBN35x0UC Double oven with convection/thermal
HBN34x0UC Single oven with convection
HBN3350UC Single oven with thermal

30" Ovens

HBL8750UC Combo with true convection oven/convection micro
HBL8650UC Double oven with true convection both cavities
HBL8450UC Single oven with true convection
HBL57x0UC Combination with true convection oven /traditional micro
HBL56x0UC Double oven with true convection/thermal
HBL54x0UC Single oven with true convection
HBL34x0UC Single oven with convection
HBL33x0UC Single oven with thermal

1.2 Features and Options

Cavity configuration and features by model appear below.

MODEL & CAVITY CONFIG / FEATURE	HBN56 (Double: C/A)	HBN54 (Single: C)	HBN35 (Double: B/A)	HBN34 (Single: B)	HBN33 (Single: A)
Amber Full-Text Display	√	√	N/A	N/A	N/A
Amber Display	N/A	N/A	√	√	√
Ergonomic Retractable Dials	√	√	N/A	N/A	N/A
Ergonomic Dials	N/A	N/A	√	√	√
True Convection	U	√	N/A	N/A	N/A
Speed Convection	U	√	N/A	N/A	N/A
Conv Bake, Broil, Roast	U	√	U	√	N/A
Bake, Broil, Roast	√ (ALL MODELS)				
Pizza, Pie	U	√	U	√	N/A
Recipes	U	√	N/A	N/A	N/A
Fast Preheat (Bake, Roast, Conv Bake, Conv Roast, True Conv, Pizza & Pie Modes)	U	√	U	√	N/A
2-hour Self-Clean	√ (ALL MODELS)				
Sabbath Mode	√	√	N/A	N/A	N/A
Meat Probe	U	√	N/A	N/A	N/A
10-Pass Broil Element	√ (ALL MODELS)				
Lighting/Cavity	2	2	1	1	1
Standard Racks	5	3	5	3	2
Overall Oven Capacity	4.2 cu ft (ALL MODELS)				

√ = feature included (on single oven or both upper and lower if double unit)
U = feature included on upper oven
N/A= feature not available

Cavity Key
A = Thermal oven
B = A + convection fan
C = B + convection element

Table 1 Bosch 27" 300 and 500 Series Features by Model

MODEL & CAVITY CONFIG / FEATURE	HBL8750 (Combo: Conv Micro/C)	HBL8650 (Double: C/C)	HBL8450 (Single: C)	HBL57 (Combo: Traditional Micro/C)	HBL56 (Double: C/A)	HBL54 (Single: C)	HBL35 (Double: B/A)	HBL34 (Single: B)	HBL33 (Single: A)
Amber Full-Text Display	√	√	√	√	√	√	N/A	N/A	N/A
Amber Display	N/A	N/A	N/A	N/A	N/A	N/A	√	√	√
Touch Control	√	√	√	N/A	N/A	N/A	N/A	N/A	N/A
Ergonomic Retractable Dials	N/A	N/A	N/A	√	√	√	N/A	N/A	N/A
Ergonomic Dials	N/A	N/A	N/A	N/A	N/A	N/A	√	√	√
True Convection	√	√	√	√	U	√	N/A	N/A	N/A
Speed Convection	√	U	√	√	U	√	N/A	N/A	N/A
Conv Bake, Broil, Roast	√	√	√	√	U	√	U	√	N/A
Bake, Broil, Roast	√ (ALL MODELS)								
Pizza, Pie	√	√	√	√	U	√	U	√	N/A
Recipes	√	√	√	√	U	√	N/A	N/A	N/A
Fast Preheat (Bake, Roast, Conv Bake, Conv Roast, True Conv, Pizza /Pie Modes)	√	√	√	√	U	√	U	√	N/A
2-hour Self-Clean	√ (ALL MODELS)								
Sabbath Mode	√	√	√	√	√	√	N/A	N/A	N/A
Meat Probe	√	U	√	√	U	√	N/A	N/A	N/A
10-Pass Broil Element	√ (ALL MODELS)								
Lighting/Cavity	3 (Halogen)	3 (Halogen)	3 (Halogen)	2	2	2	1	1	1
Standard Racks	2	5	2	3	5	3	5	3	2
Telescopic Racks	1	1	1	N/A	N/A	N/A	N/A	N/A	N/A
Overall Oven Capacity	4.7 cu ft (ALL MODELS)								

√ = feature included (on single oven or both upper and lower if double unit)
U = feature included on upper oven
N/A= feature not available

Cavity Key
A = Thermal oven
B = A + convection fan
C = B + convection element

Table 2 Bosch 30" 300, 500, and 800 Series Features by Model

1.3 Data Plate

The data plate reflecting model number and FD number is located on the underside of the interface control panel, as shown in Figure 1.

Figure 1 Data plate location

The first 4 positions of the FD number reflect the year/month the product was built. FD numbers that begin with 87 were built in 2007; 88 = 2008; 89 = 2009, etc.

> **NOTICE**
>
> Be prepared to provide the **complete Model Number and FD number** printed on the data tag of the unit when contacting Bosch Customer Support or Technical Support for assistance.

1.4 Warranty

The product is warranted to be free from defects in materials and workmanship for a period of 12 months from date of purchase.

Bosch will pay for all repair labor and replacement parts found to be defective due to materials and workmanship. Service must be provided by a Factory Authorized Service Agency, during normal working hours.

Bosch assumes no responsibility for any repairs made on our products by anyone other than authorized service technicians.

Find the complete product warranty statement in the *Use and Care Manual*.

2 OPERATION

2.1 Element Duty Cycles

A new PID algorithm controls the way in which the elements cycle on and off during each cooking mode duty cycle. Every minute, the oven temperature is compared to the set point and a recalculation occurs, which results in varied element cycle times rather than the standard fixed 60-second cycle.

During Preheat, however, a 2-point control is still used and there is a defined element on-time. The following table reflects the duration and start point by Preheat mode, for cavity types A, B, and C.

Technicians should have ample time to troubleshoot element problems during the ~10-minute preheat period.

ELEMENT DUTY CYCLES DURING PREHEAT
1 = All single ovens / double ovens with FD prior to 8804
2 = Double ovens with FD 8804 and later

	BAKE ELEMENT				RING ELEMENT				BROIL ELEMENT			
PREHEAT MODE	DURATION (seconds)	START POINT (seconds)	DURATION (seconds)	START POINT (seconds)	DURATION (seconds)	START POINT (seconds)	DURATION (seconds)	START POINT (seconds)	DURATION (seconds)	START POINT (seconds)	DURATION (seconds)	START POINT (seconds)
	-1-		-2-		-1-		-2-		-1-		-2-	
CAVITY A												
Bake	60	0	36	24	-	-	-	-	18	0	24	0
Roast	45	15	27	33	-	-	-	-	33	0	33	0
Broil	-	-	-	-	-	-	-	-	60	0	60	0
Warm	36	12	36	12	-	-	-	-	12	0	12	0
Self-clean	42	18	42	18	-	-	-	-	42	0	42	0
Sabbath	60	0	36	24	-	-	-	-	18	0	24	0
CAVITY B												
Bake	60	0	60	0	-	-	-	-	18	0	18	0
Roast	45	15	45	15	-	-	-	-	33	0	33	0
Broil	-	-	-	-	-	-	-	-	60	0	60	0
Convection Bake	42	18	42	18	-	-	-	-	30	0	30	0
Convection Roast	45	15	45	15	-	-	-	-	33	0	33	0
Convection Broil	-	-	-	-	-	-	-	-	60	0	60	0
Warm	36	12	36	12	-	-	-	-	12	0	12	0
Proof	18	0	18	0	-	-	-	-	18	30	18	30
Self-clean	42	18	42	18	-	-	-	-	42	0	42	0
Pizza	60	0	60	0	-	-	-	-	18	0	18	0
Sabbath	60	0	60	0	-	-	-	-	18	0	18	0
CAVITY C												
Bake	60	0	42	18	-	-	18	18	18	0	18	0
Roast	45	15	36	24	-	-	24	36	33	0	24	0
Broil	-	-	-	-	-	-	-	-	60	0	60	0
Convection Bake	42	18	30	30	-	-	12	30	30	0	30	0
Convection Roast	45	15	27	33	-	-	27	33	33	0	27	0
Convection Broil	-	-	-	-	-	-	-	-	60	0	60	0
True Convection	30	30	27	33	30	30	24	36	30	0	27	0
Warm	36	12	36	12	-	-	-	-	12	0	12	0
Dehydrate	-	-	-	-	30	0	24	0	-	-	-	-
Proof	18	0	18	0	-	-	-	-	18	30	18	30
Self-clean	42	18	42	18	-	-	-	-	42	0	42	0
Speed Convection	60	0	60	0	60	0	60	0	54	0	54	0
Pizza	60	0	42	18	-	-	18	18	18	0	18	0
Pie	60	0	42	18	-	-	18	18	18	0	18	0
Sabbath	60	0	42	18	-	-	18	18	18	0	18	0

Based on a single 60-second cycle during Preheat

Table 3 Element duty cycles during preheat by cavity type.

2.1.1 Using Table 3 (*Element Duty Cycles During Preheat*)

In Table 3, *Duration* is defined as the number of seconds an element is turned on (e.g., *12* indicates the element will be on for 12 seconds.) *Start Point* is defined as the point in the cycle at which the element will turn on (e.g., *30* indicates the element will turn on in the 30th second of the cycle).

Using the data in the table, below is an example of how the elements cycle on and off during a 60-second Preheat cycle in **True Convection** mode (**see Cavity C**):

HBL8450UC built in 01/2008 (see columns labeled ***-1-***)

- **Bake Element**: After initial 30 seconds of the cycle, element turns on and remains on for the final 30 seconds of the cycle.
- **Ring Element**: After initial 30 seconds of the cycle, element turns on and remains on for the final 30 seconds of the cycle (same as Bake Element).
- **Broil Element**: Turns on at the beginning of the cycle (0) and remains on for the first 30 seconds of the cycle.

HBL8450UC built in 08/2008 (see columns labeled ***-2-***)

- **Bake Element**: After initial 33 seconds of the cycle, element turns on and remains on for the final 27 seconds of the cycle.
- **Ring Element**: After initial 36 seconds of the cycle, element turns on and remains on for the final 24 seconds of the cycle.
- **Broil Element**: Turns on at the beginning of the cycle (0) and remains on for the first 27 seconds of the cycle.

In Fast Preheat (available in cavities B and C with convection fan), the same elements reflected in the table are used, but the broil element is on ~10% longer, and the convection fan stays on as well.

It is important to note that during regulation (regular cooking period that follows Preheat), different elements may be used and element duty cycles will vary.

2.2 Sequence of Events

Figures 2 – 5 reflect the sequence of events which occur during Preheat for the various cooking modes.

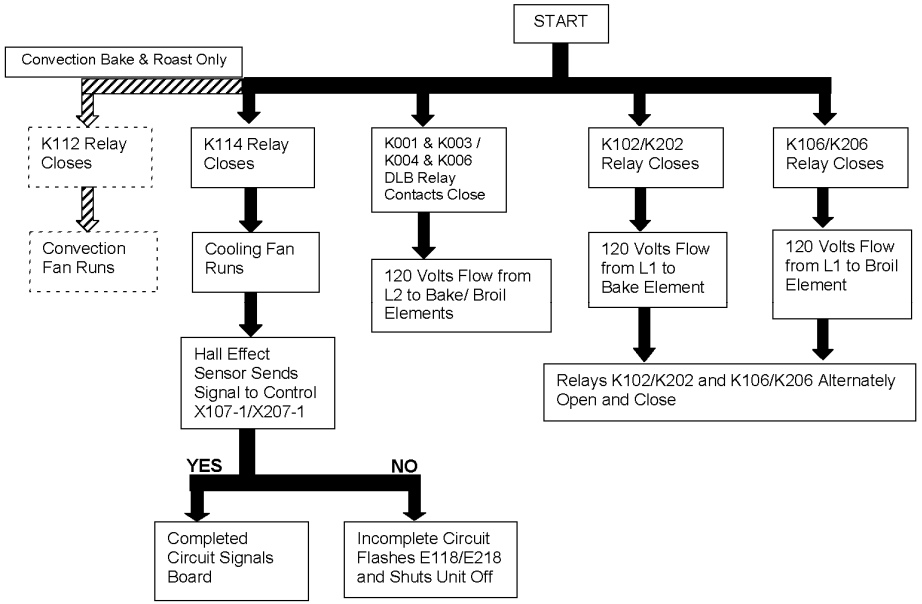

START
Convection Bake & Roast Only
K112 Relay Closes
Convection Fan Runs
K114 Relay Closes
Cooling Fan Runs
Hall Effect Sensor Sends Signal to Control X107-1/X207-1
YES
NO
Completed Circuit Signals Board
Incomplete Circuit Flashes E118/E218 and Shuts Unit Off
K001 & K003 / K004 & K006 DLB Relay Contacts Close
120 Volts Flow from L2 to Bake/ Broil Elements
K102/K202 Relay Closes
120 Volts Flow from L1 to Bake Element
K106/K206 Relay Closes
120 Volts Flow from L1 to Broil Element
Relays K102/K202 and K106/K206 Alternately Open and Close

Figure 2 Sequence of Events during Preheat: Convection Bake & Roast/ Bake, Roast, Warm, Proof, Pizza, Pie, & Sabbath modes

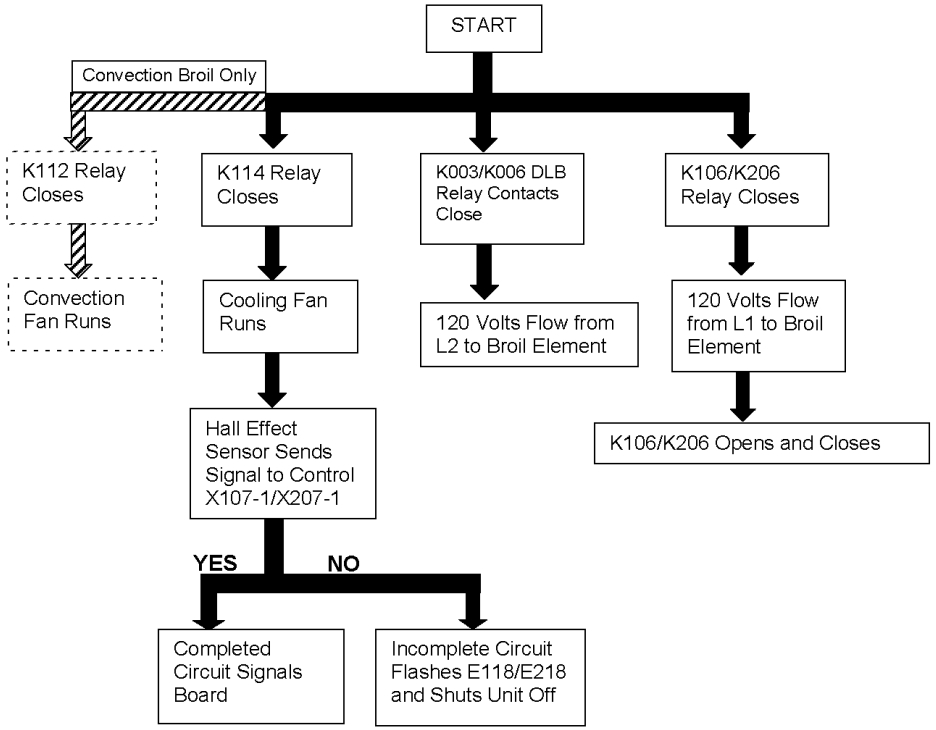

START
Convection Broil Only
K112 Relay Closes
Convection Fan Runs
K114 Relay Closes
Cooling Fan Runs
Hall Effect Sensor Sends Signal to Control X107-1/X207-1
YES
NO
Completed Circuit Signals Board
Incomplete Circuit Flashes E118/E218 and Shuts Unit Off
K003/K006 DLB Relay Contacts Close
120 Volts Flow from L2 to Broil Element
K106/K206 Relay Closes
120 Volts Flow from L1 to Broil Element
K106/K206 Opens and Closes

Figure 3 Sequence of Events during Preheat: Convection Broil/Broil modes

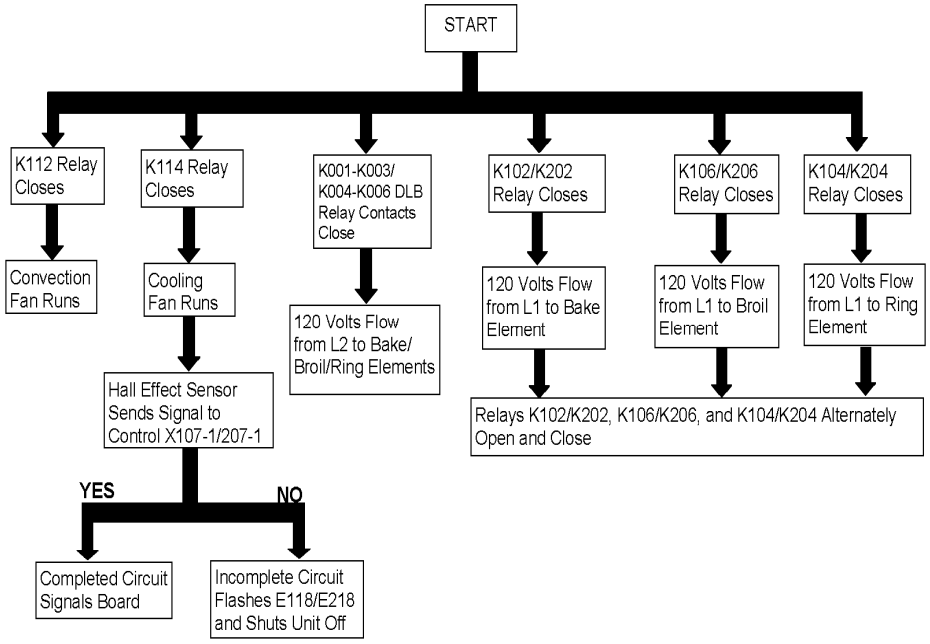

START
K112 Relay Closes
K114 Relay Closes
K001-K003/ K004-K006 DLB Relay Contacts Close
K102/K202 Relay Closes
K106/K206 Relay Closes
K104/K204 Relay Closes
Convection Fan Runs
Cooling Fan Runs
120 Volts Flow from L2 to Bake/ Broil/Ring Elements
120 Volts Flow from L1 to Bake Element
120 Volts Flow from L1 to Broil Element
120 Volts Flow from L1 to Ring Element
Hall Effect Sensor Sends Signal to Control X107-1/207-1
Relays K102/K202, K106/K206, and K104/K204 Alternately Open and Close
YES
NO
Completed Circuit Signals Board
Incomplete Circuit Flashes E118/E218 and Shuts Unit Off

Figure 4 Sequence of Events during Preheat: True Convection

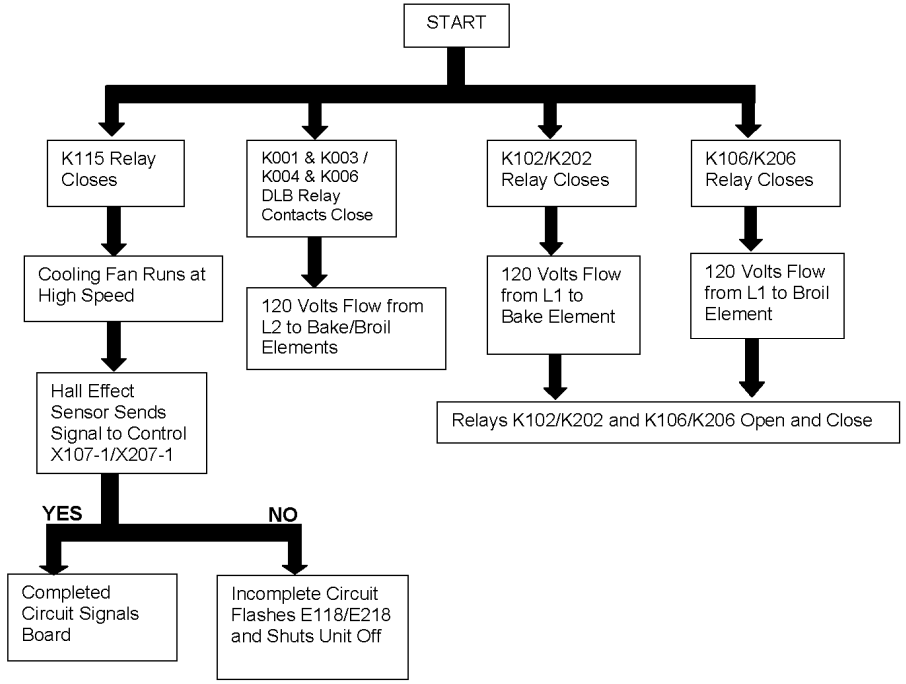

START
K115 Relay Closes
K001 & K003 / K004 & K006 DLB Relay Contacts Close
K102/K202 Relay Closes
K106/K206 Relay Closes
Cooling Fan Runs at High Speed
120 Volts Flow from L2 to Bake/Broil Elements
120 Volts Flow from L1 to Bake Element
120 Volts Flow from L1 to Broil Element
Hall Effect Sensor Sends Signal to Control X107-1/X207-1
Relays K102/K202 and K106/K206 Open and Close
YES
NO
Completed Circuit Signals Board
Incomplete Circuit Flashes E118/E218 and Shuts Unit Off

Figure 5 Sequence of Events during Preheat: Self-clean mode

2.3 Cooling Fans

Cooling fans will run for two minutes after the oven has been shut off, regardless of the oven temperature. After two minutes, the fan will continue to run until the interior temperature of the cavity reaches a maximum of 350°.

(Early models were programmed with a lower shut-off temperature, which resulted in a longer running time for the cooling fan.)

3 COMPONENT ACCESSIBILITY

3.1 Serviceable from Front

- Door
- Door latch/motor assembly
- Cavity lamps
- High Temperature Cutout (HTC)
- Convection ring element and convection fan assembly (except motor)
- Temperature sensor
- Broil element

The user interface is serviceable from the front after sliding the oven out from the wall ~ 4 inches.

3.2 Serviceable from Top

The PC control module (relay board) is serviceable from the top access panel after sliding the oven out from the wall ~16 inches.

With the unit pulled completely away from the wall, the following components are serviceable from the top after removing the top panel:

- Halogen light transformers
- Terminal block
- Power supply

3.3 Serviceable from Rear

With the unit pulled completely away from the wall and the back panel(s) removed, the following components can be serviced from the rear:

- Convection fan motor
- Bake element
- Cooling fan(s)

4 SERVICE AND REPAIR

⚠ CAUTION

- ✓ Sheet metal parts often have sharp edges. Avoid injury by handling these parts with care.
- ✓ Turn off the electrical power circuit to the oven at the main junction box before servicing this unit.
- ✓ For those checks requiring the use of electrical power, exercise extreme care.

4.1 Doors

On double ovens, the Bosch logo is located on the lower oven outer door glass.

30” models ending with Customer Service Index (KI) /01 were produced with 4-pane doors. Subsequent models have 3-pane doors.

4.1.1 Removing and Replacing the Door(s)

⚠ CAUTION

Avoid injury when removing and replacing oven doors.

- ✓ Be sure oven is cool enough for handling.
- ✓ Position hinges properly (see Figure 6).
- ✓ Grasp only by sides, not by the handle.
- ✓ Do not force door open or closed.
- ✓ Handle with care–door weighs ~38 pounds.

To remove the door…

1. Open door completely.
2. Flip hinge levers back to open as shown below.

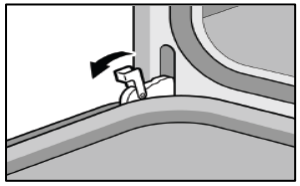


Figure 6 Opening the hinge lever

3. Close door until it remains open ~6 inches.
4. Using both hands, lift door up and out.

To replace the door…

1. Position door as if it were open ~6 inches and insert hinges into slots.
2. Open door completely.
3. Flip hinge levers forward to close as shown below.

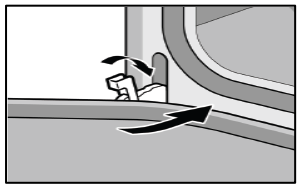


Figure 7 Closing hinge lever

4. Close and open door to check operation.

- Hinges should be replaced in pairs.
- The 300, 500, and 800 series ovens do not have serviceable hinge receivers.

4.2 Door Latch/Motor Assembly

The motorized door latch (MDL) mechanism (120V 5W) has 2 switches - the door switch and the lock/unlock switch. The latch will automatically lock when mode and temperature selectors are set to CLEAN, and unlock when the oven cools to ~490°F. It is serviced as an assembly.

If the latch becomes stuck in the locked position, turning the unit off and back on will open the latch if the cavity temperature <450°. If latch is stuck in partially locked position, press SELF CLEAN, then ON/OFF.

The latch can be tested in Service mode.

To remove the latch/motor assembly:

1. Remove 3 T20 screws securing trim piece to frame (do not remove 2 screws on either side of latch).
2. Pull trim forward about 1”, then slightly to the right or left to clear the screw tab (see Figure 8).
3. Slip hands under trim and lift upper plate while sliding trim and latch toward you.

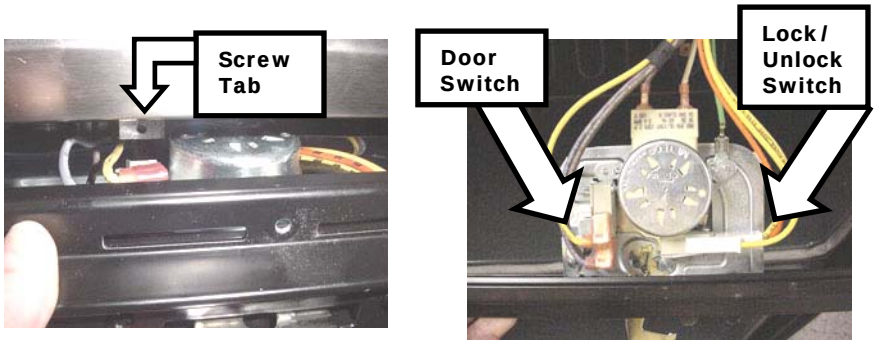


Figure 8 Door latch/motor assembly

4.3 Lamps

The operation of the cavity lights is determined by the state of the lights, the state of the oven, and the button(s) pressed. The table below illustrates the results after each button press.

Current state of lights		Current state of oven		Key(s) Pressed	Resulting state of lights	
Upper	Lower	Upper	Lower		Upper	Lower
OFF	OFF	OFF	OFF	LIGHT	ON	ON
		ON	OFF	LIGHT	ON	OFF
		OFF	ON	LIGHT	OFF	ON
		ON	ON	LIGHT	ON	ON
		DOES NOT MATTER		UPPER+LIGHT	ON	OFF
		DOES NOT MATTER		LOWER+LIGHT	OFF	ON
ON	OFF	OFF	OFF	LIGHT	OFF	OFF
		ON	OFF	LIGHT	OFF	OFF
		OFF	ON	LIGHT	ON	ON
		ON	ON	LIGHT	OFF	OFF
		DOES NOT MATTER		UPPER+LIGHT	OFF	OFF
		DOES NOT MATTER		LOWER+LIGHT	ON	ON
OFF	ON	OFF	OFF	LIGHT	OFF	OFF
		ON	OFF	LIGHT	ON	ON
		OFF	ON	LIGHT	OFF	OFF
		ON	ON	LIGHT	OFF	OFF
		DOES NOT MATTER		UPPER+LIGHT	ON	ON
		DOES NOT MATTER		LOWER+LIGHT	OFF	OFF
ON	ON	OFF	OFF	LIGHT	OFF	OFF
		ON	OFF	LIGHT	OFF	ON
		OFF	ON	LIGHT	ON	OFF
		ON	ON	LIGHT	OFF	OFF
		DOES NOT MATTER		UPPER+LIGHT	OFF	ON
		DOES NOT MATTER		LOWER+LIGHT	ON	OFF

Table 4 Operation of cavity lights

The lights will automatically illuminate whenever the oven door is opened, and turn off when the door is closed.

4.3.1 Replacing Lamps

The number and type of lamps in each cavity will vary, depending on model. Two types of bulbs are used: 10-watt, 12-volt bi-pin halogen light bulbs or 40- (30”) or 25-watt (27”) incandescent appliance bulbs.

Handle all bulbs with a clean, dry cloth.

⚠ CAUTION

- ✓ Turn off power to the oven at the fuse or breaker box–light socket is live with door open.
- ✓ Be sure oven and lights are cool to the touch.
- ✓ Handle glass lenses carefully.

4.3.1.1 Halogen Side Lamp (Vertical-style)

1. Remove racks and rack support.
2. **Firmly** push the top mounting clip up and back (toward oven wall), until it releases the glass cover.

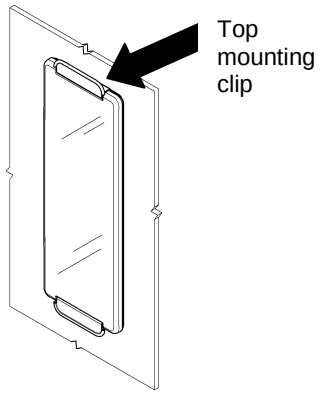


Figure 9 Vertical-style side lamp

3. Pull the halogen bulb straight out from its socket.
4. Using a clean, dry cloth, insert the new bulb.
5. Reinsert the bottom of the glass cover (smooth side out) into the bottom clip, and firmly push the top of the cover into the upper clip until it snaps into place.
6. Restore power to the unit.

4.3.1.2 Halogen Side Lamp (Horizontal-style)

1. Remove racks and rack support.
2. Slide tip of flat-blade screwdriver between fixing clip and lamp housing, while supporting lens cover along bottom edge.

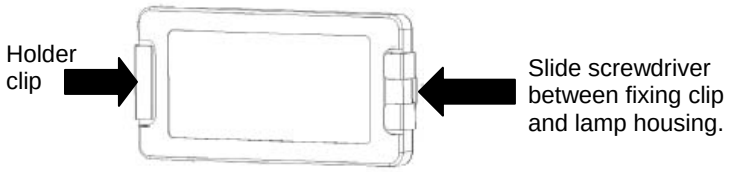


Figure 10 Horizontal-style side lamp

3. Gently twist screwdriver to loosen the lens cover.
4. Remove cover and fixing clip.
5. Grasp halogen bulb and pull it straight out from its socket.
6. Using a clean, dry cloth, insert new bulb into socket.
7. Reinsert lens cover into the holder clip and gently push back until fixing clip snaps into place.
8. Restore power to the unit.

4.3.1.3 Halogen Ceiling Lamp and Incandescent Cavity Lamp

1. Unscrew glass cover.
2. Pull halogen bulb straight out of its socket, or unscrew appliance bulb.
3. Using a clean, dry cloth, insert the new bulb.
4. Replace the glass cover.
5. Restore power to the unit.

Figure 11 Round halogen ceiling lamp (L); traditional lamp with 40W or 25W appliance bulb (R).

4.4 High Temperature Cutout (HTC)

The HTC is a normally closed switch which will interrupt the relay supply voltage in the event of a high temperature event caused by a malfunctioning control module.

The HTC is located in the plenum, behind and to the left of the MDL. Although it cannot be easily removed or replaced, a screwdriver can be used to reach the reset button located on the top center of the HTC after the latch plate has been removed.

4.5 Convection Fan and Ring Element

All models except the HBL33/HBN33 and the lower cavity of the HBL56/HBN56 and HBL35/HBN35 models, which have a thermal oven cavity, are configured with convection capabilities in the upper and/or lower ovens. The HBL34/HBN34 and HBL35/HBN35 models have a convection fan only, and the remaining models with convection cavities have both a convection fan and a convection (also called a "ring" or "3rd") element, which gives the ovens true (or genuine European) convection capability.

Depending on the cooking mode selected, the fan may be used, with or without the ring element, to circulate heat evenly throughout the cavity in various cooking modes.

The ring element (240V 2000W) and/or fan blade are easily accessed on the rear wall of the oven cavity behind the convection baffle. The convection fan motor is accessible only from the rear of the unit.

Refer to the *Element Strip Diagram* to test the element at the control module, or

1. Remove 2 T20 screws on either side of the element terminals.
2. Pull the element toward you so that terminal wires are inside the oven cavity.
3. Disconnect the wires from the terminals.
4. Use an ohmmeter to check for resistance of ~29 ohms.

4.6 Temperature Sensor

Use an ohmmeter to check the resistance of the sensor. Normal ranges (based on cavity temperature) are shown in Table 5.

TEMP. (°F)	RESISTANCE
32 ± 1.9	1000 ± 4.0
75 ± 2.5	1091 ± 5.3
200 ± 3.8	1350 ± 7.8
250 ± 4.4	1453 ± 8.9
350 ± 5.4	1654 ± 10.8
450 ± 6.9	1852 ± 13.5
550 ± 8.2	2047 ± 15.8
650 ± 9.6	2237 ± 18.5
865 ± 13.0	2634 ± 23.5
900 ± 13.6	2697 ± 24.4

Table 5 Normal temperature sensor resistance readings temperature

Real-time cavity and probe temperatures can be measured while in Service Mode (refer to the section entitled *Service Mode* or the *Service Guide* for instructions). After entering Service mode, advance through the HBL8, HBL5/HBN5 menu options by pressing FAST PREHEAT until the *Oven temp* or *Probe temp* option is reached. On the HBL3/HBN3 models, press TEMP to advance through the menu.

4.6.1 Setting Temperature Offsets

In some cases, it may be necessary to adjust the oven temperature if food is consistently under- or over-cooked. Temperature offsets can be entered by the customer from the Customer Settings or Setup menu to raise or lower the cavity temperature during Bake, Convection Bake, Roast, Convection Roast, and Speed Convection modes (all heating modes which operate between 250°F and 550°F).

A +25° offset will result in a cavity temperature of 350° when the temperature knob is set to 325° for any of the cooking modes listed above. Similarly, a -25° offset will result in a cavity temperature of 300° when the temperature knob is set to 325°.

The adjusted temperature cannot be less than 250°F or greater than 550°F.

4.6.1.1 HBL3/HBN3

The oven must be turned off with no timer running in order to access the menu.

1. Press and hold **Temp** for two seconds to access the Customer Settings menu.
2. Press **Timer** to advance through the menu.
3. When *CS7: Oven Temperature Offset* (for upper/single oven) or *CS8: Oven Temperature Offset* (for lower oven) appears, use the Settings dial to set the desired value.
4. Confirm by pressing **Timer**.
5. Press **Temp** to exit the Customer Settings menu.

4.6.1.2 HBL5/HBN5

The Cooking Mode dial and Settings dial must be in the Off position in order to access the menu.

1. Press and hold **Info** for two seconds to access the Setup menu.
2. Press the arrows △▽ to advance through the menu to *Oven Temperature Offset*.
3. Rotate the Settings dial to set the desired value.
4. Press the arrows △▽ to advance to the next menu item, which will confirm the offset entry.
5. Press **Info** to exit the Setup menu.

Note: for double ovens, an offset can be entered separately for each oven by selecting either *Up. Offset* or *Lo. Offset* from the menu.

4.6.1.3 HBL8x50

The oven must be Off in order to access the menu.

1. Press and hold **Info** for two seconds to access the Setup menu.
2. Press the arrows △▽ to advance through the menu to *Oven Temperature Offset*.
3. Press **+** and **–** to set the desired value.
4. Press the arrows △▽ to advance to the next menu item, which will confirm the offset entry.
5. Press **Info** to exit the Setup menu.

Note: for double ovens, an offset can be entered separately for each oven by selecting either *Up. Offset* or *Lo. Offset* from the menu.

4.7 Broil Element

All Bosch models have a recessed 10-pass (240V 3600W) broil element.

Refer to the *Element Strip Diagram* to test the element at the control module, or

1. Remove the 2 T20 screws securing the element to the broil reflector.
2. Remove the 2 T20 screws on either side of the element terminals.
3. Pull the element toward you so that the terminal wires are inside the oven cavity.
4. Disconnect the wires from the inner broil element terminals.
5. Use an ohmmeter to check for resistance of ~16 ohms.

4.8 User Interface

Figure 12 reflects the variations of the B1, B2, and B3 user interfaces used in the Bosch ovens.

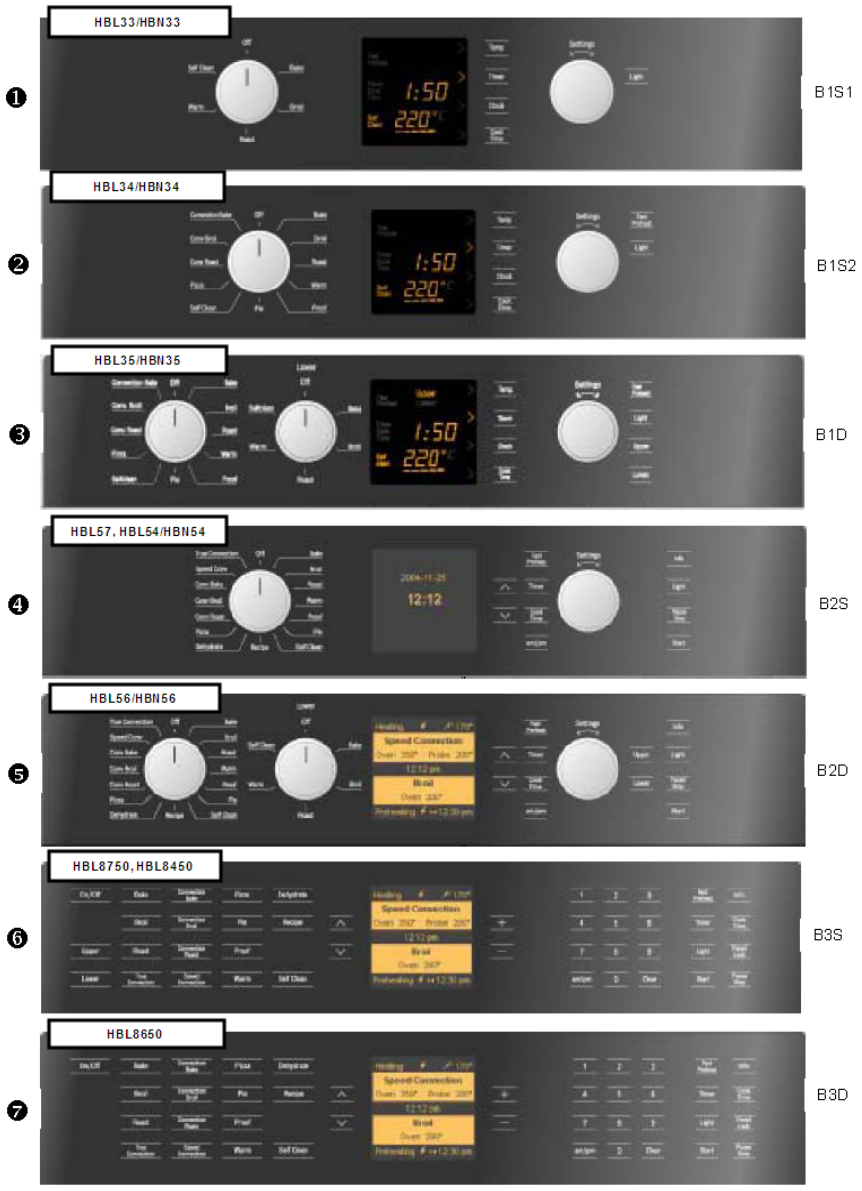


Figure 12 Bosch user interfaces

The user interface control board is assembled onto a chassis and the entire assembly is serviced as a single unit.

4.8.1 Removing the User Interface

1. Slide unit out from wall ~ 4 inches.
2. Remove 2 T20 bolts from each side.
3. Grasp one corner of the interface panel and lift upward, then pull it toward you (see Figure 13).
4. Repeat on the other side.
5. Disconnect the 3-wire yellow harness leading to PC control module.

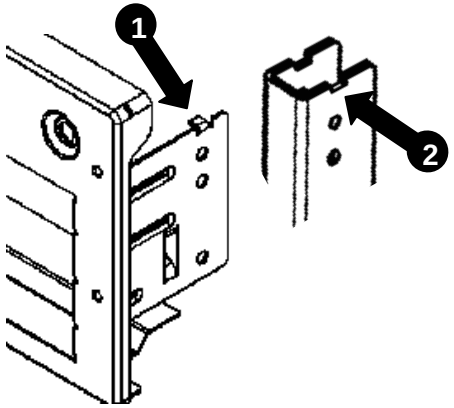


Figure 13 Each side of the user interface bracket has a tab ❶ that rests in a slot on the chassis u-profile ❷.

To remove the user interface board and chassis from the manifold bracket, remove the 10 binding-head T20 screws securing the interface chassis to the bracket (these screws are unique to the interface – notice the serrated underside).

If the user interface assembly was difficult to remove, break the metal tabs off (❶) to make it easier to reinstall; use pliers to bend the tabs back and forth until they break off.

After installing a new user interface board, always reset the oven and test.

4.9 PC Control Module (Relay Board)

To access the PC control module, pull the unit out from the wall 15-16 inches, and remove the access panel (3 T20 screws) on the top of the unit. See Figure 14.

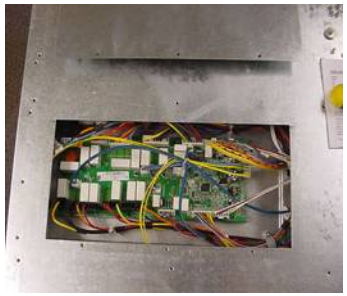


Figure 14 PC Control Module is visible after removing access panel.

Whenever possible, conduct troubleshooting tests at the control module. Refer to Figures 15 -16 for plug and relay locations.

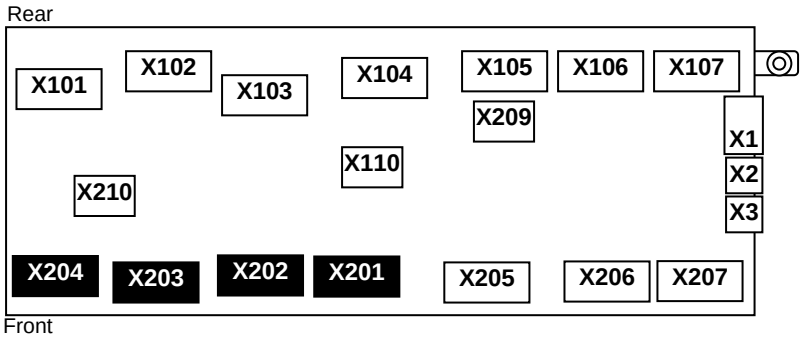
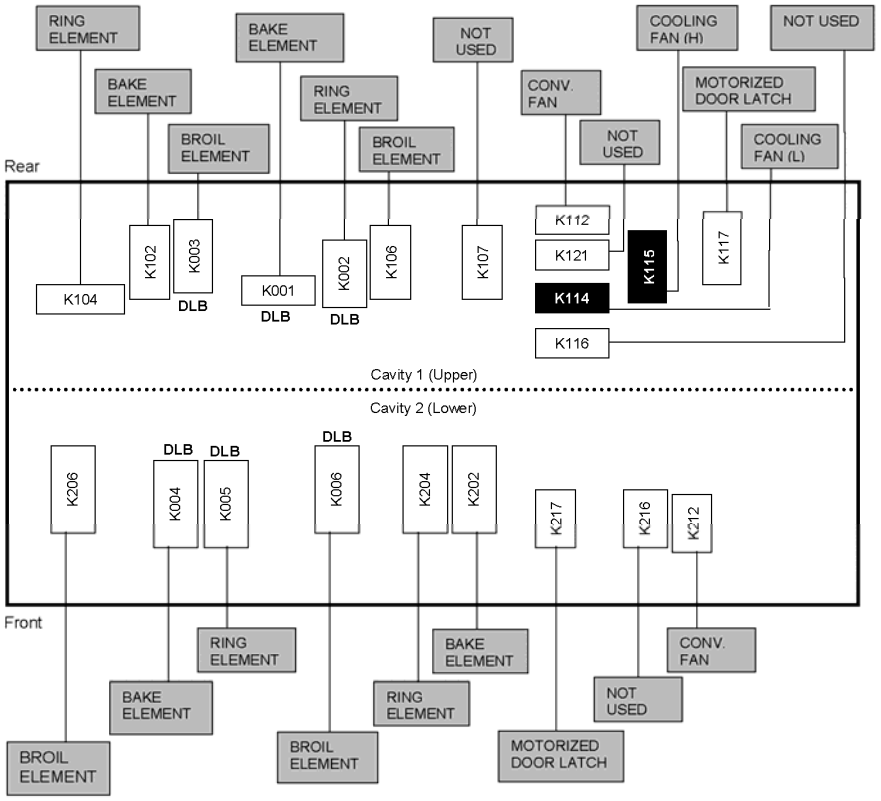


Figure 15 Plug locations on the double oven control module

PC Control Board Relay Diagram: Double Oven



Figures 16 Relay locations on the double oven control module

NOTICE

More than 75% of the control modules returned to the factory are fully functional. Before diagnosing a bad control module, be sure to disconnect and reconnect each wire/wire harness.

Use Table 6 as a reference guide to the plugs, pins, and wire colors found on the PC control module.

PLUG NO	PIN NO	FROM/TO
COMMUNICATION		
X1	5-position card-edge connector - WH	Control Module to Power Supply Module
X2	3-position card-edge connector - YE	Control Module to User Interface Module
X3	3-position card-edge connector - YE	Control Module to Factory Service Port
X108*	2-position card-edge connector - WH/GN	Control Module to Meat Probe
UPPER/SINGLE CAVITY ELEMENTS		
X101	1-OR	K102 Relay to Bake Element
	2-BK	L1 to K102 Relay
	3-Blank	N/A
	4-BK	L1 to K104 Relay
	5-Blank	N/A
	6-BU**	K104 Relay to Ring Element
X102	1-YE	K003 DLB Relay to Broil Element
	2-Not Used	N/A
	3-Blank	N/A
	4-RD	L2 to K003 DLB Relay
	5-RD	L2 to K003 DLB Relay
X103	1-BU**	K002 DLB Relay to Ring Element
	2-RD	L2 to K002 DLB Relay
	3-Blank	N/A
	4-RD	L2 to K001 DLB Relay
	5-Blank	N/A
	6-OR	K001 DLB Relay to Bake Element
	7-Blank	N/A
X104	1-Blank	N/A
	2-Blank	N/A
	3-Blank	N/A
	4-BK	L1 to K106 Relay
	5-BK	L1 to K106 Relay
	6-Blank	N/A
	7-Not Used	N/A
	8-YE	K106 Relay to Broil Element
X110	1-BU	High Temperature Cutout (HTC)
	2-Not Used	N/A
	3-BU	High Temperature Cutout (HTC)
UPPER/SINGLE CAVITY SMALL LOAD		
X105	1-Blank	N/A
	2-YE	K112 Relay to Convection Fan
	3-BU/WH	K114 Relay to Cooling Fan (L)
	4-BU	K115 Relay to Cooling Fan (H)
	5-BN	K115 to Light Transformer
	6-Blank	N/A
	7-BN	K117 Relay to Motorized Door Latch (MDL)
	8-RD	L2 to K117 Relay
X106	1-YE	Door Switch
	2-YE	Door Switch
	3-Not Used	N/A
	4-YE/BK	Latch Switch
	5-OR/BK	Latch Switch
	6-VT/WH	Door Switch
	7-BN/WH	Door Switch
X107	1-WH	Hall Effect Sensor
	2-BK	Hall Effect Sensor
	3-RD	Hall Effect Sensor
	4-WH	Temperature Sensor
	5-WH	Temperature Sensor

PLUG NO	PIN NO	FROM/TO
X110	1-BU	High Temperature Cutout (HTC)
	2-Not Used	N/A
	3-BU	High Temperature Cutout (HTC)
LOWER CAVITY ELEMENTS		
X201	1-BU **	K204 Relay to Ring Element
	2-Blank	N/A
	3-Blank	N/A
	4-BK **	L1 to K204 Relay
	5-BK	L1 to K202 Relay
	6-Blank	N/A
	7-OR	K202 Relay to Bake Element
X202	1-RD	L2
	2-RD	L2 to K006 DLB Relay
	3-Not Used	N/A
	4-Not Used	N/A
	5-YE	K006 DLB Relay to Broil Element
X203	1-OR	K004 DLB Relay to Bake Element
	2-Not Used	N/A
	3-RD	L2 to K004 DLB Relay
	4-Blank	N/A
	5-RD **	L2 to K005 DLB Relay
	6-Blank	N/A
	7-BU **	K005 DLB Relay to Ring Element
X204	1-YE	K206 to Broil Element
	2-Not Used	N/A
	3-Blank	N/A
	4-BK	L1 to K206 Relay
	5-BK	L1 to K206 Relay
X210	1-BU	High Temperature Cutout (HTC)
	2-Not Used	N/A
	3-BU	High Temperature Cutout (HTC)
LOWER CAVITY SMALL LOAD		
X205	1-YE	K212 Relay to Convection Fan
	2-RD	L2 to K217 Relay
	3-BN	K216 to Light Transformer
	4-Not Used	N/A
	5-Not Used	N/A
	6-BN	K217 Relay to Motorized Door Latch (MDL)
X206	1-YE	Door Switch
	2-YE	Latch Switch
	3-YE/BK	Latch Switch
	4-OR/BK	Latch Switch
	5-Not Used	N/A
	6-VT/WH	Door Switch
	7-BN/WH	Door Switch
X207	1-WH	Hall Effect Sensor
	2-Not Used	N/A
	3-WH	Temperature Sensor
	4-RD	Hall Effect Sensor
	5-BK	Hall Effect Sensor
	6-WH	Temperature Sensor
X209	1-BU/WH	X105-P3 to Cooling Fan (L)
	2-BU	X105-P4 to Cooling Fan (H)

* Not used on HBL3, HBN3 ** HBL8, HBL5, HBN5 only

Table 6 Plugs and pins on the PC control module

To remove the PC control module…

1. Disconnect all wires.
2. Remove 1 T20 screw securing control module to chassis.
3. Slide module to the left to release the 3 tabs on the bottom of

the module bracket from the 3 slots in the chassis.

Always reset the oven and test after changing the control module. In some cases, a second reset may be necessary.

4.10 Power Supply Module

The power supply module (9.6V 12.5W) provides DC voltage to the control module and user interface.

4.11 Halogen Light Transformer(s)

One transformer (120V-12V 40VA) is utilized per cavity. Triac switches 120 VAC to the transformer. There are 4 terminals on the new transformer, as shown in Figure 16.

The resistance between the primary terminals should measure ~12.8 ohms and the resistance between the secondary terminals should measure ~0.32 ohms.

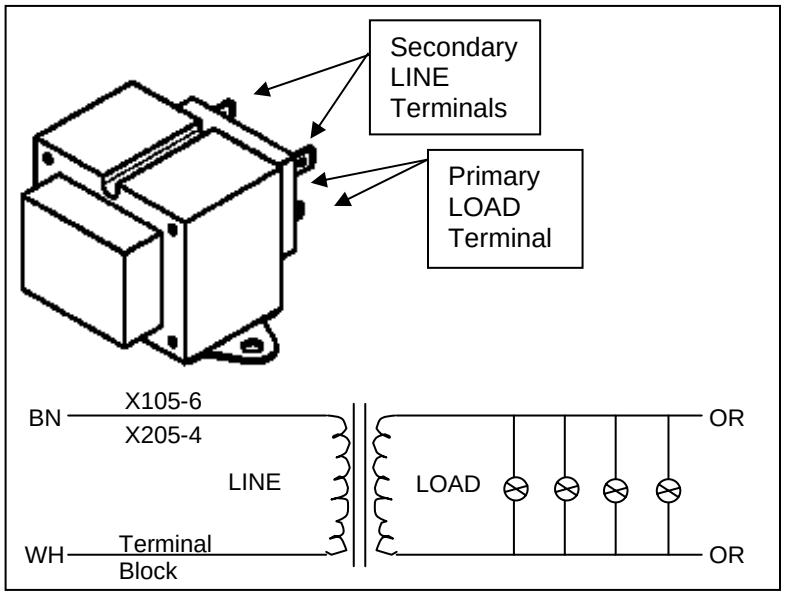


Figure 17 Halogen light transformer

4.12 Convection Fan Motor

The convection fan motor is 120V 29W. To test the motor, check for 120V across X105 / Pin 2 (upper/single) or X205 / Pin 1 (HBL8650) and chassis ground or neutral.

The motor is accessible from the rear, after removing the rear outer sheet metal panel.

1. Disconnect the 2 wires from the motor terminals.
2. Remove 3 T20 screws from the arms of the motor assembly.
3. Use a tap and a hammer to dislodge the assembly from the clips that secure it to the rear of the unit. (Position tap on the arm secured by the rightmost clip.)

4.13 Bake Element (Upper Oven)

Refer to the *Strip Element Diagram* to test the element (240V 2000W) at the control module, or disconnect the wires from the terminals and use a meter to check for a reading of ~29 ohms.

To clear a path for removing the bake element, it is necessary to remove the vertical air channel(s) and disconnect wires. Before proceeding, note the position of the wires.

4.13.1 Removing the Bake Element

1. Pull wires out of plastic purse locks attached to upper and lower vertical air channels.
2. Remove upper air channel (4 T20 screws).
3. To create a pathway for the bake element, disconnect OR wires from upper and lower bake element terminals; YE from convection element terminals, BU/WH, BU, and WH from cooling fan motor.
4. Drape the wires/harnesses to the side so they do not block the element as it is pulled out.
5. Remove the screw between the element terminals.

6. Tuck insulation up into the oven wall as necessary.
7. While holding element terminals, lift element upward to clear the outer edge of the compartment.
8. Hold element on both sides and lift upward as you slide it straight out.

4.13.2 Reinstalling the Bake Element

There are 2 tabs inside the element cavity, and the front tab will prevent the element from going in all the way. Use a ruler or the vertical air channel (after removing plastic purse locks) as a tool to guide the element back in.

1. Place the tool inside the cavity, on top of the tab, then insert the element on top of the tool and slide it in.
2. After the element is beyond the front tab, remove the tool.
3. Complete the installation.
4. Replace the plastic purse locks clips if they were removed from the vertical air channel.

4.14 Cooling Fan Motor (Upper Oven)

Each 2-speed cooling fan (120V 28/41W) has 3 terminals (high speed, low speed, and neutral) and a Hall effect sensor. There is tape around the motor windings and the terminals are labeled N, H, and L for reference, as shown in Figure 18.

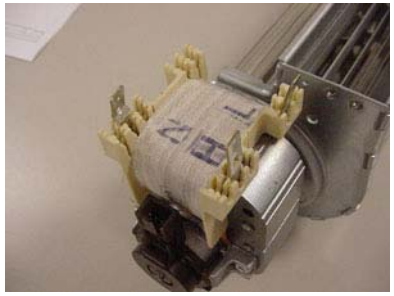


Figure 18 Tape on cooling fan windings marked to designate terminals

If the Hall effect sensor does not detect fan rotation, an error will display. To test the upper fan at the control module, check voltage across X105 / Pin 3 or 4 and neutral.

1. Remove 3 T20 screws securing the fan to the mounting bracket.
2. Remove 3 T20 screws securing the bracket to the oven housing.
3. Slide bracket up and out to release it from the 2 tabs holding it in position.
4. Remove 3 T20 screws from the right side of the unit's top panel.
5. Lift the right corner of the top panel and remove the fan/motor.

5 ERROR CODES

A *Service Guide* with error code information, wiring diagrams, and instructions for entering Service mode (if applicable) is packed with every unit. Find it on the underside of the upper plenum access panel as shown in Figure 19.

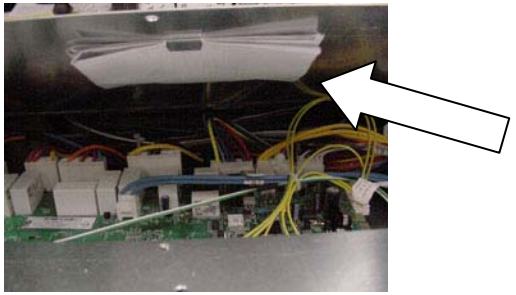


Figure 19 Location of *Bosch Built-in Oven Service Guide*

5.1 Error Code Table

The following table is included in the oven *Service Guide*. The error codes which begin with *E2* apply to the lower cavity of double ovens. Diagrams referenced in the table can also be found in the appropriate *Service Guide.*

CODE	DESCRIPTION	CAUSE/ACTION
E000	Wrong module combination	Control module and user interface are mismatched. Set Option Code properly.
E003	Electronics too hot	User interface exceeds 185°F/85°C
E005	Communication error	Loss of communication between user interface and control module at start-up. Check for ~4.9Vdc on middle pin of communication harness. Check connections of all communication lines and control module inputs.
E009	ROM check error in user interface	User interface not getting all information from control module at start-up. Check for loss of communication or disconnected wire somewhere in unit
E010	Data memory error in user interface	
E011	Continuous pushing of single key	Check user interface assembly. Inspect touch PCB.
E012	Defective User Interface PCB temp. sensor	
E014	ON/OFF key does not work	
E032	Continuous pushing of keys	10 seconds of multiple keys being pressed.
E101/E201	Cvt 1/Cvt 2 Temp. sensor open	Refer to Diagram 2/4
E104/E204	Cvt 1/Cvt 2/Temp. sensor shorted	Refer to Diagram 2/4
E106/E206	Cvt 1/Cvt 2 Door latch does not lock	Refer to Diagram 2/4
E107/E207	Cvt 1/Cvt 2 Door latch does not unlock	Refer to Diagram 2/4
E115/E215	Cvt 1/Cvt 2 Temp. in unlocked cavity too high	
E116	Cvt 1/Cvt 2 Probe error	Standard probe module is part of the control module. Refer to Diagram 1.
E118/E218	Cvt 1/Cvt 2 Cooling fan supervision error	Cooling fan speed is too low or too high. Refer to Diagram 2/4. Ensure wire harness not touching motor or pinched. Confirm plenum not touching fan end cap. Check Hall Effect Sensor connection.
E122	Cvt 1/ Probe sensor temp. too high or shorted.	Check probe receptacle and harness.
E123	Cvt 1/ Probe sensor temp. too low	
E124/E224	Cvt 1/Cvt 2 Door switch error	Door switch is in undefined state. Refer to Diagram 2/4.
E126/E226	Cvt 1/Cvt 2 Door latch error	Door latch is in an undefined state. Refer to Diagram 2/4.
E303	Electronics too hot	Control module exceeds 212°F/100°C.
E309	ROM Check error in control module	
E310	Data memory error in control module	
E312	Defective control module PCB temp. sensor	

Table 7 Error codes

5.2 Service Mode / Setting Option Code

When both the user interface board and control module (relay board) are replaced, the oven will display E000 (Wrong Module Combination) fault code at start-up. To resolve, place the unit in Service Mode and manually set the Option Code.

5.2.1 HBL3/HBN3

To enter service mode…

1. Press and hold TEMP.
2. Press and hold COOK TIME.
3. Rotate the Cooking Mode dial out of the OFF position.
4. Release the two buttons.

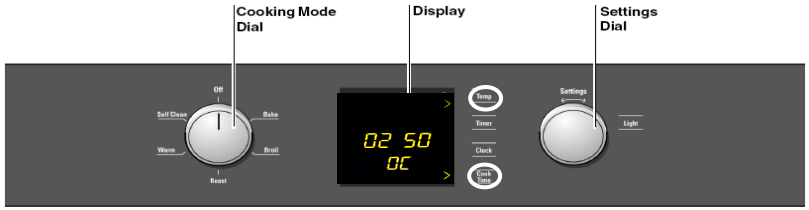


Figure 20 HBL3/HBN3 User interface

To set the option code…

5. Locate the 4-digit code on the label near the PC Control Board in the upper plenum or in Table 8 below.
6. Press TEMP to advance to the Option Code (OC) screen.
7. Press COOK TIME.
8. Rotate the Settings dial to change the code.

To exit service mode…

9. Rotate the Cooking Mode dial to the OFF position.
10. Rotate the Settings dial to set the time.

To reset the oven…

11. Unplug the unit or turn the power off at the circuit breaker for 30 seconds.
12. Rotate the Settings dial to set the time.

5.2.2 HBL5/HBN5

To enter service mode…

1. Press and hold START and FAST PREHEAT.
2. Rotate the Cooking Mode dial out of the OFF position.
3. Release the two buttons.

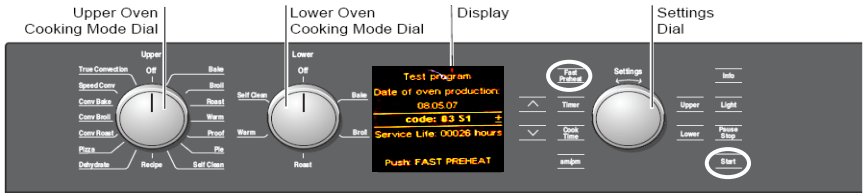


Figure 21 HBL5/HBN5 User interface

To set the option code…

4. Locate the 4-digit code on the label near the PC Control Board in the upper plenum or in Table 8 below.
5. Set the Option Code by rotating the Settings dial.

To exit service mode…

6. Rotate the (upper oven) Cooking Mode dial to the OFF position.
7. Rotate the Settings dial to set the time.
8. Press ⏷ and rotate the Settings dial to set the date. (See *Use and Care Manual* for further information about setting time and date.)

To reset the oven…

9. Unplug the unit or turn the power off at the circuit breaker for 30 seconds.
10. Set the current time and date (see 7 and 8 above).

5.2.3 HBL8

To enter service mode…

1. Press and hold START.
2. Press and hold FAST PREHEAT.
3. Press ON/OFF.
4. Release all three buttons.

Figure 22 HBL8 User interface

To set option code…

5. Locate the 4-digit code on the label near the PC Control Board in the upper plenum or in Table 8 below.
6. Press FAST PREHEAT to advance to the Option Code menu selection.

7. Follow the instructions on the oven display and enter the appropriate code.
8. To confirm the change after the code has been entered, press FAST PREHEAT to advance to the next menu item.

To exit service mode…

9. Press ON/OFF to exit Service Mode.
10. Follow the instructions on the display to set the time and the date.

To reset the oven…

11. Unplug the unit or turn the power off at the circuit breaker for 30 seconds.
12. Follow the instructions on the display to set the current time and date.

Always confirm that the error has been cleared and the oven is functioning normally after setting the option code.

5.3 Option Codes

Model	Option Code	Model	Option Code
HBL33	0150	HBL86	0951
HBL34	0250	HBL87	0351
HBL35	0750	HBN33	0140
HBL54	0351	HBN34	0240
HBL56	0851	HBN35	0740
HBL57	0351	HBN54	0341
HBL84	0351	HBN56	0841

Table 8 Bosch option codes

6 DEMO MODE

The display and lights will work on 120VAC when the black and red wires are tied together.

7 TROUBLESHOOTING

Use the *Fault Tree Diagram and Fault Tree* on the following pages to guide troubleshooting efforts.

7.1 Fault Tree Diagram

The purpose of this information is to direct Field Service toward a focus-based approach when working on the new ovens. The scope of this document will be to review certain difficult-to-establish field issues in order to offer additional support to the representatives within BSH who work with the Service Technicians in the field.

DEFINITIONS OF UNIT BEHAVIORS

Oven Dead: No activity within the visual display of the oven. When keys are touched or knobs actuated (rotated), the unit offers no response visually or audibly.
(Special condition: When the oven door is opened the cavity lights do not come on.)

Oven Display Dead: No activity within the visual display of the oven. When keys are touched or knobs actuated (rotated), the User Interface offers audible response.
(Special Condition: when the oven door is opened the cavity lights come on.)

Oven Does Not Heat: all visual and tactile operation of the oven is as expected, but one or more heating elements do not operate.

Oven Does Not Retain Heat: (Heating too low) – Oven pre-heats but does not maintain appropriate temperature.

Oven Keys Not Functional: All visual activity on the control operates as expected, but some or all of the tactile keys do not respond to touch.

E005: Los of functional communication within the appliance having to do with the Control Module and User Interface connections inside the appliance.

DEFINITIONS OF UNIT STATUS

Start-up Failure: Failure noticed at start-up of the appliance and is repeatable when power is cycled to the unit.

Failure Determined During Operation of the Appliance: (Not repeatable/not readily repeatable failures.) Oven is either operating in a cooking mode or in an idle state with no cooking mode running.

C. Check output voltage and signal voltage from Control Module.
Should be ~9.6 VDC: Pin 1 to Pin 3
Should be ~5 VDC*: Pin 1 to Pin 2
*(Fluctuation to ~4.7 VDC every 2 seconds typical)
*Note: If the voltage is stable, there is a problem with this signal. Isolate harness or board and replace. (Step C&D)

B. Check supply input to the Control Module and signal voltage.
Should be ~9.6 VDC: Pin 1 to Pin 2
Should be ~9.6 VDC: Pin 4 to Pin 5
Should be ~4.5 VDC: Pin 2 to Pin 3

A. Check Power Supply connection and signal voltage.
Should be ~9.6 VDC: Pin 1 to Pin 2
Should be ~9.6 VDC: Pin 4 to Pin 5
Should be ~4.5 VDC: Pin 2 to Pin 3

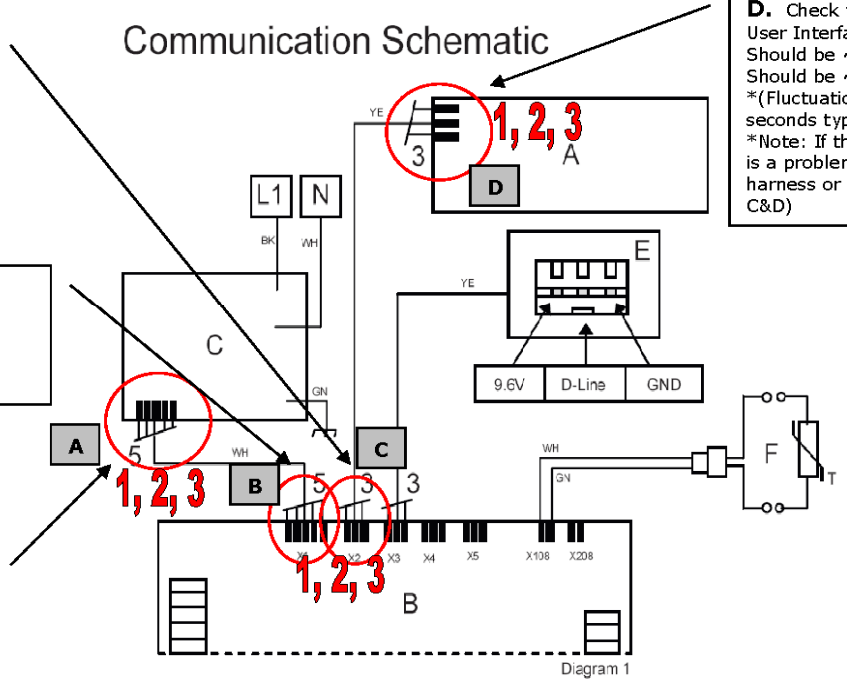


Diagram 1

D. Check the input voltage to the User Interface and the signal voltage.
Should be ~9.6 VDC: Pin 1 to Pin 3
Should be ~5 VDC*: Pin 1 to Pin 2
*(Fluctuation to ~4.7 VDC every 2 seconds typical)
*Note: If the voltage is stable, there is a problem with this signal. Isolate harness or board and replace. (Step C&D)

A	User Interface Module
B	Control Module
C	Power Supply Module 9.6V 12.5W
D	Serve@Home Module
E	Service Port
F	Meat Probe
G	Temp Sensor
H	Cooling Fan Hall Effect Sensor
I	Door Switch
J	Latch Switch
K	Latch Motor
M	Convection Fan
P	Lights 2 or 3 x 10W
R	Light Transformer 120V-12V 40VA
S	Cavity 1 Rotiss. Motor
T	Bake Element 240V 2000W
U	Convection Element 240V 2000W
V	Broil Element 240V 3600W
W	Outer Broil Element 240V 1400W
X	High Temp Cutout
Y	Cooling Fan

Cause 1: Start-up failures
During oven power-up, these signals must be received from the corresponding components.

Cause 2: Time-sync message is not received from CM for 200 seconds.

Cause 3: There is no acknowledgement from the CM when a message is repeated 8 times.

Small Load Schematic

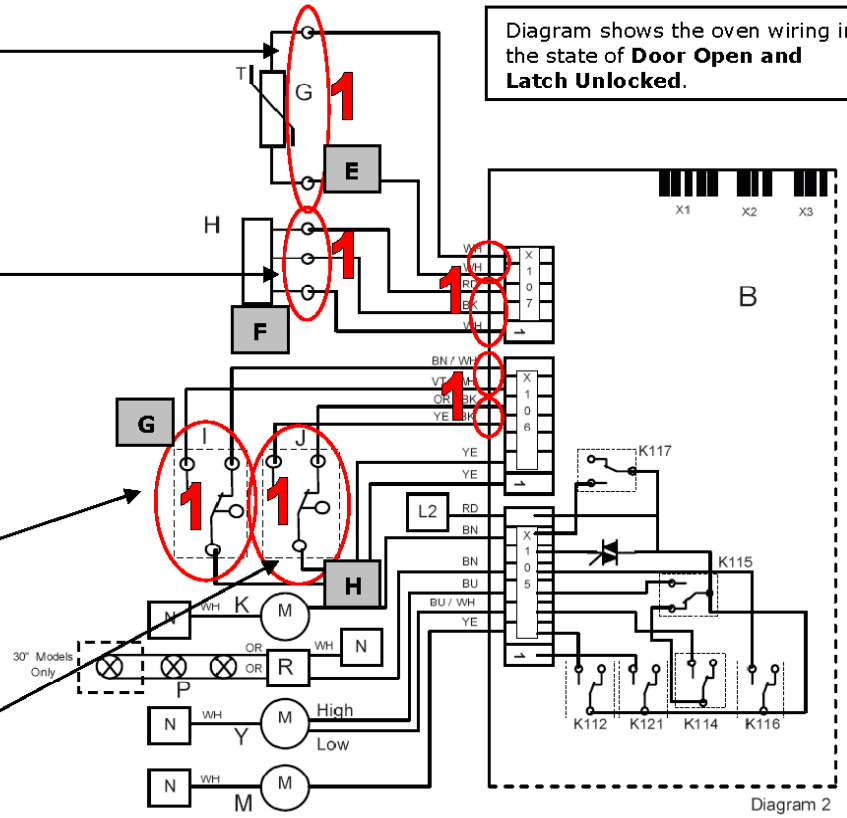
E. Temperature Sensor
Failure mode if disconnected: Cooling Fan(s) will always be on.

F. Hall Effect Sensor
(Activated when the oven is operating)
Failure mode detected – E118/E218 – (Speed wrong or disconnected)
To check if sensor is connected: with the Cooling Fan(s) running, measure voltage between the black and white wire. If the measured voltage is a stable ~3.5 VDC, then the wires are not connected or the Hall Sensor is damaged. If the measured voltage is ~1.7 VDC, then the wires are connected and the Hall Sensor is functioning.
(Remember to check both upper and lower cavity fan connections.)

G. Door Position Switch
Failure mode detected – Oven always in **pause** mode
If this connection is missing, undefined, or damaged, the oven will present a situation where the oven is always in a **paused** state. No function will be allowed. (Basically, the control thinks that the door is always open.)

H. Latch Switch
Check continuity. Double throw switch – both poles.
Failure mode detected – E124/E126 displayed after starting heating mode.
If this connection is missing, undefined, or damaged, the heating mode will not start and the display will present E124 and/or E126.

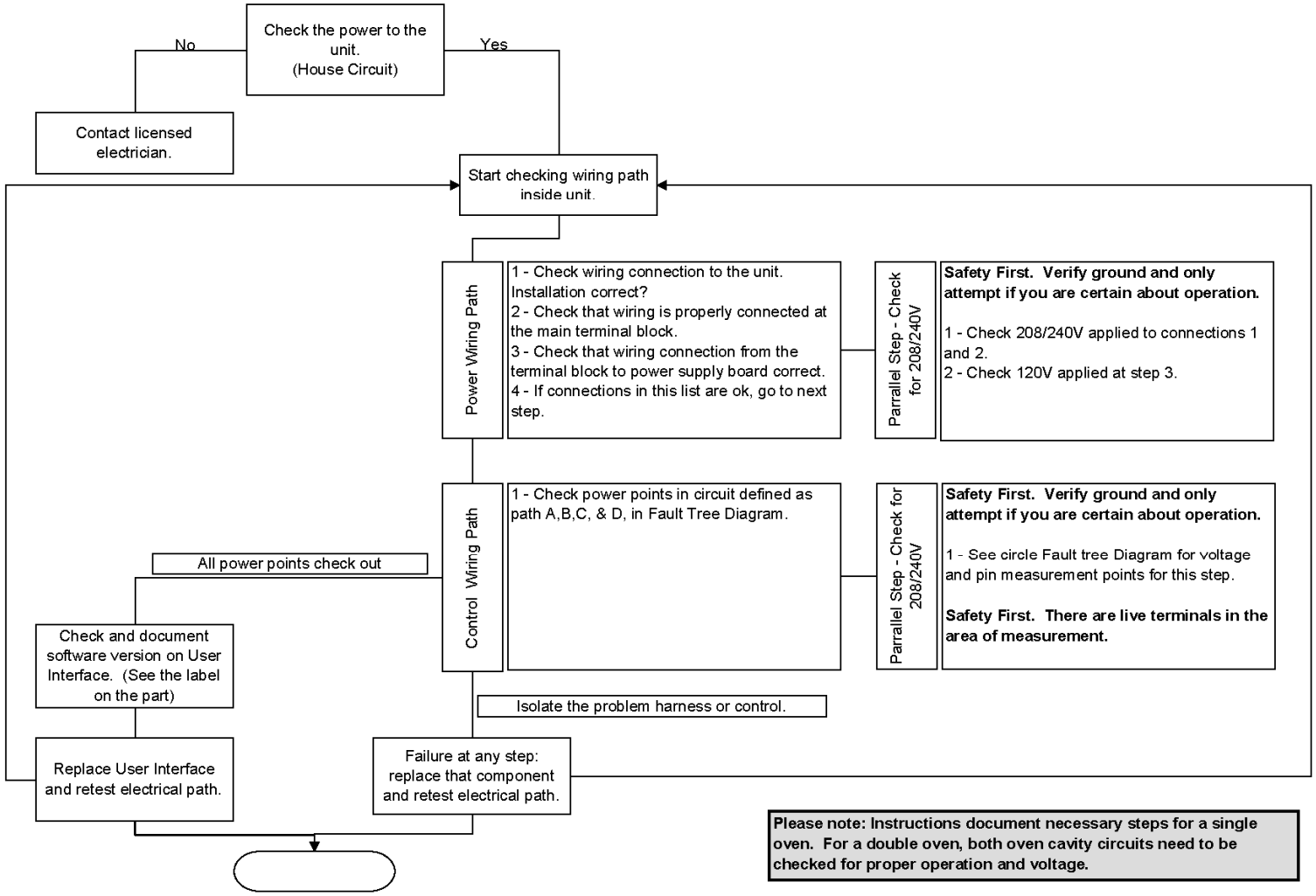
Diagram shows the oven wiring in the state of **Door Open and Latch Unlocked**.



7.2 Fault Tree

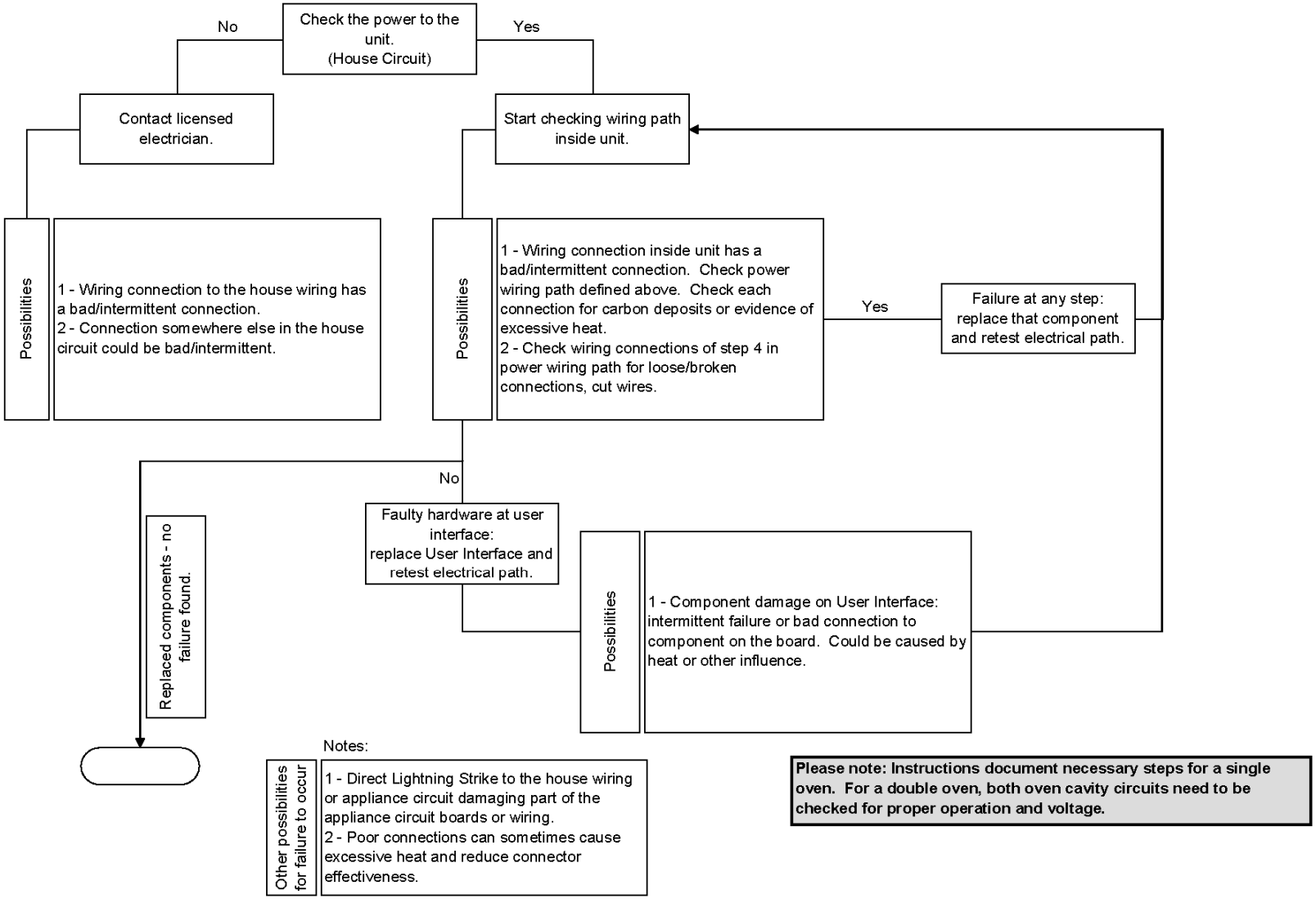
OVEN DEAD: No activity within the visual display of the oven. When keys are touched or knobs actuated (rotated), the unit offers no response visually or audibly.

Failure at unit power up: Oven will not start / unit appears not to receive power


Check the power to the unit. (House Circuit)
No
Yes
Contact licensed electrician.
Start checking wiring path inside unit.
Power Wiring Path
1 - Check wiring connection to the unit. Installation correct?
2 - Check that wiring is properly connected at the main terminal block.
3 - Check that wiring connection from the terminal block to power supply board correct.
4 - If connections in this list are ok, go to next step.
Parrallel Step - Check for 208/240V
Safety First. Verify ground and only attempt if you are certain about operation.
1 - Check 208/240V applied to connections 1 and 2.
2 - Check 120V applied at step 3.
Control Wiring Path
1 - Check power points in circuit defined as path A,B,C, & D, in Fault Tree Diagram.
Parrallel Step - Check for 208/240V
Safety First. Verify ground and only attempt if you are certain about operation.
1 - See circle Fault tree Diagram for voltage and pin measurement points for this step.
Safety First. There are live terminals in the area of measurement.
All power points check out
Check and document software version on User Interface. (See the label on the part)
Isolate the problem harness or control.
Replace User Interface and retest electrical path.
Failure at any step: replace that component and retest electrical path.
Please note: Instructions document necessary steps for a single oven. For a double oven, both oven cavity circuits need to be checked for proper operation and voltage.

OVEN DEAD cont'd

Failure During Operation: Assumes oven has been operating either in a heating mode or at a rest state with the clock displayed/operating as expected prior to the failure being noticed.


Check the power to the unit. (House Circuit)
No
Yes
Contact licensed electrician.
Start checking wiring path inside unit.
Possibilities
1 - Wiring connection to the house wiring has a bad/intermittent connection.
2 - Connection somewhere else in the house circuit could be bad/intermittent.
Possibilities
1 - Wiring connection inside unit has a bad/intermittent connection. Check power wiring path defined above. Check each connection for carbon deposits or evidence of excessive heat.
2 - Check wiring connections of step 4 in power wiring path for loose/broken connections, cut wires.
Yes
Failure at any step: replace that component and retest electrical path.
No
Faulty hardware at user interface: replace User Interface and retest electrical path.
Possibilities
1 - Component damage on User Interface: intermittent failure or bad connection to component on the board. Could be caused by heat or other influence.
Replaced components - no failure found.
Notes:
Other possibilities for failure to occur
1 - Direct Lightning Strike to the house wiring or appliance circuit damaging part of the appliance circuit boards or wiring.
2 - Poor connections can sometimes cause excessive heat and reduce connector effectiveness.
Please note: Instructions document necessary steps for a single oven. For a double oven, both oven cavity circuits need to be checked for proper operation and voltage.

OVEN DISPLAY DEAD: No activity within the visual display of the oven; when keys are touched or knobs actuated (rotated), the User Interface offers audible response.

Failure at unit power up: No display lighting or characters (Pro - no lights/display/clock operation) / buttons and knobs offer proper response

Possibilities	1 - Component failure within the User Interface: replace User Interface.

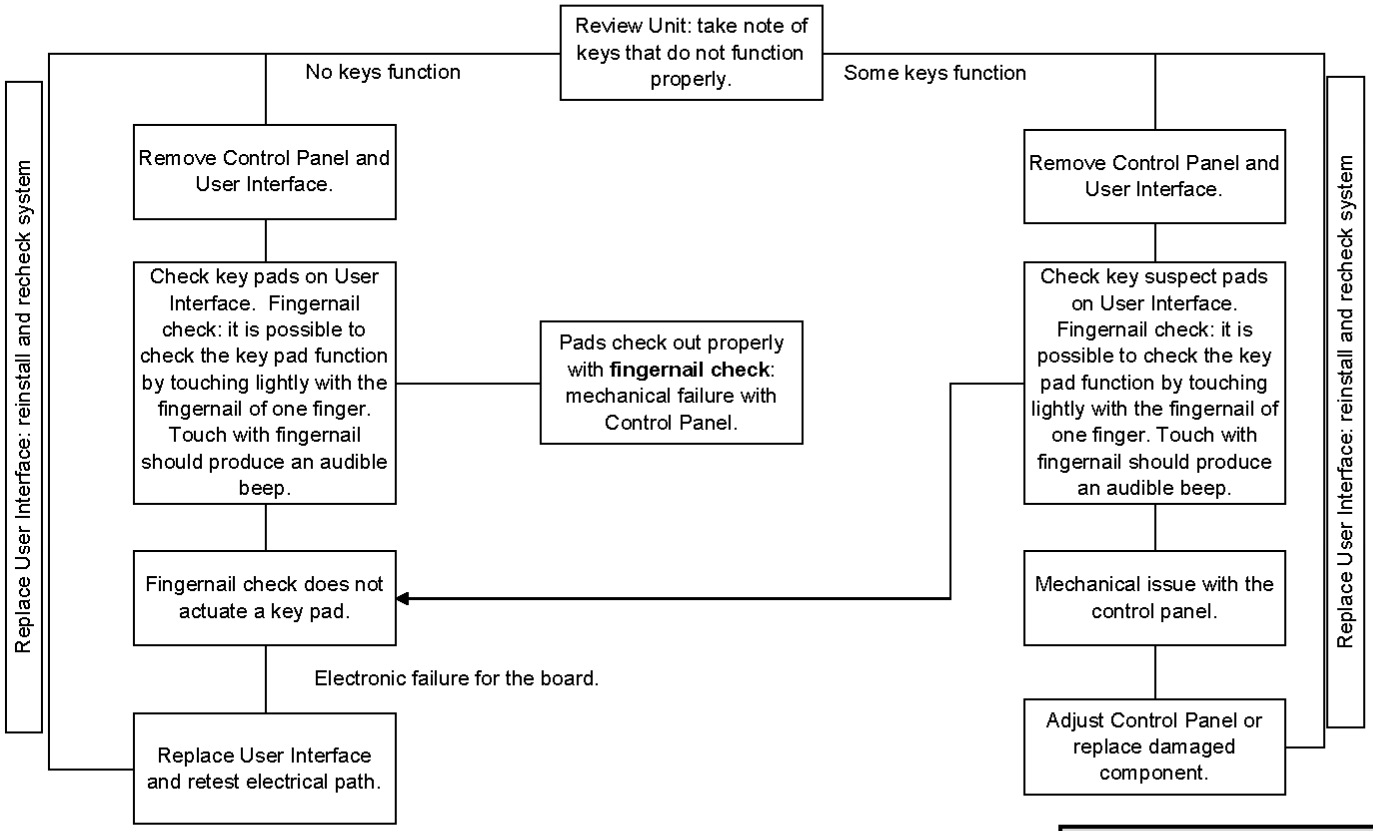
Failure During Operation: Assumes oven has been operating either in a heating mode or at a rest state with the clock displayed/operating as expected prior to the failure being noticed.

Possibilities	1 - Component failure within the User Interface: replace User Interface.

Please note: Instructions document necessary steps for a single oven. For a double oven, both oven cavity circuits need to be checked for proper operation and voltage.

OVEN KEYS NOT FUNCTIONAL: All visual activity on the control operates as expected, but some or all of the tactile keys do not respond to touch.

Failure at unit power-up
Failure during operation
(Same Fault Tree for both failure modes)

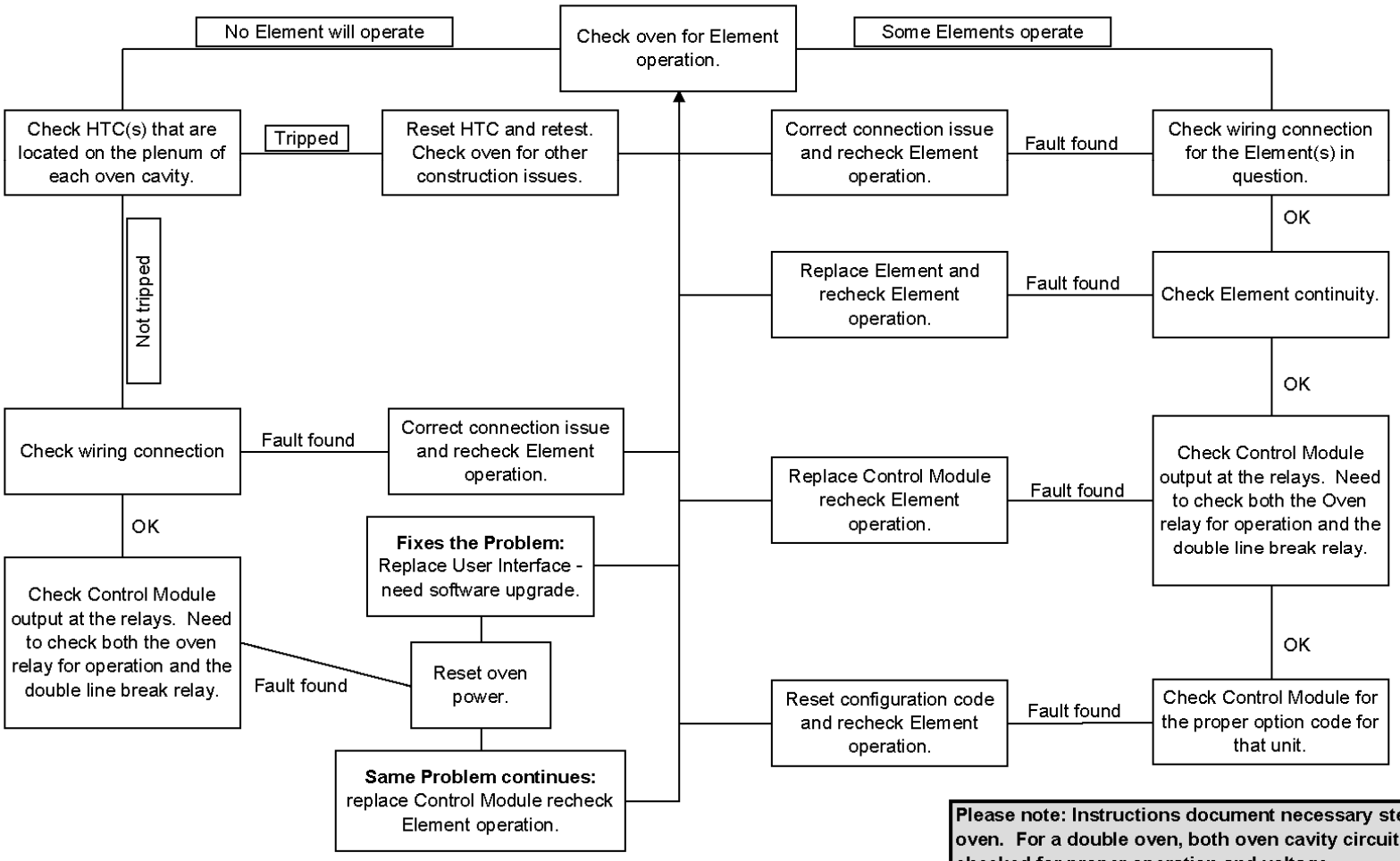

Review Unit: take note of keys that do not function properly.
No keys function
Some keys function
Remove Control Panel and User Interface.
Remove Control Panel and User Interface.
Check key pads on User Interface. Fingernail check: it is possible to check the key pad function by touching lightly with the fingernail of one finger. Touch with fingernail should produce an audible beep.
Pads check out properly with **fingernail check**: mechanical failure with Control Panel.
Check key suspect pads on User Interface. Fingernail check: it is possible to check the key pad function by touching lightly with the fingernail of one finger. Touch with fingernail should produce an audible beep.
Fingernail check does not actuate a key pad.
Mechanical issue with the control panel.
Electronic failure for the board.
Adjust Control Panel or replace damaged component.
Replace User Interface and retest electrical path.
Replace User Interface: reinstall and recheck system
Replace User Interface: reinstall and recheck system

Mechanical connection to the glass

Please note: Instructions document necessary steps for a single oven. For a double oven, both oven cavity circuits need to be checked for proper operation and voltage.

OVEN DOES NOT HEAT: All visual and tactile operation of the oven is as expected, but one or more heating elements do not operate.

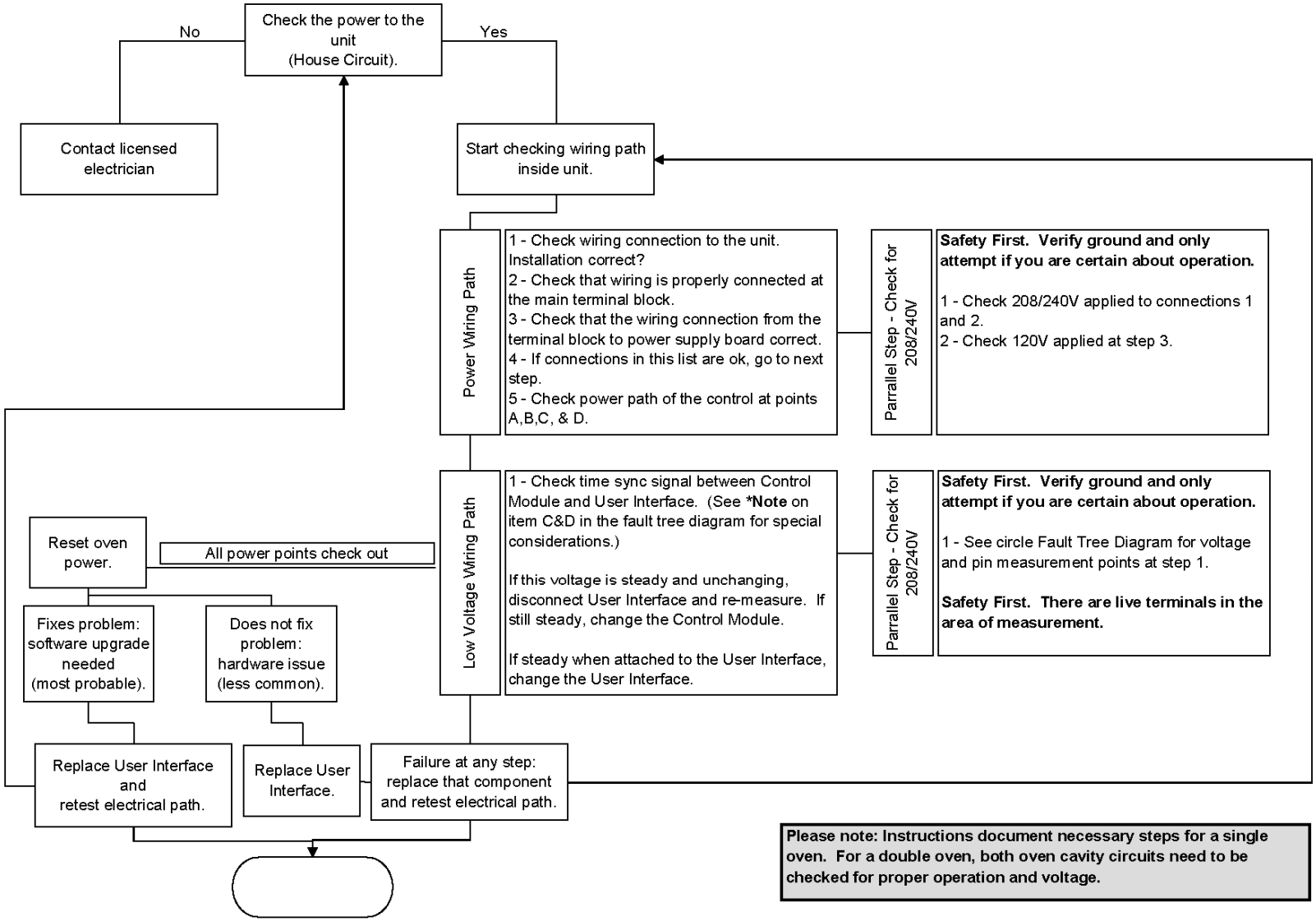
Failure at unit power-up
Failure During Operation
(Same Fault Tree for both failure modes)


Check oven for Element operation.
No Element will operate
Some Elements operate
Check HTC(s) that are located on the plenum of each oven cavity.
Tripped
Reset HTC and retest. Check oven for other construction issues.
Not tripped
Check wiring connection
Fault found
Correct connection issue and recheck Element operation.
OK
Check Control Module output at the relays. Need to check both the oven relay for operation and the double line break relay.
Fault found
Reset oven power.
Fixes the Problem: Replace User Interface - need software upgrade.
Same Problem continues: replace Control Module recheck Element operation.
Correct connection issue and recheck Element operation.
Fault found
Check wiring connection for the Element(s) in question.
OK
Replace Element and recheck Element operation.
Fault found
Check Element continuity.
OK
Replace Control Module recheck Element operation.
Fault found
Check Control Module output at the relays. Need to check both the Oven relay for operation and the double line break relay.
OK
Reset configuration code and recheck Element operation.
Fault found
Check Control Module for the proper option code for that unit.

Please note: Instructions document necessary steps for a single oven. For a double oven, both oven cavity circuits need to be checked for proper operation and voltage.

E005: Loss of functional communication within the appliance between certain electrical components of the appliance; appliance actually displays E005 error to customer/servicer.

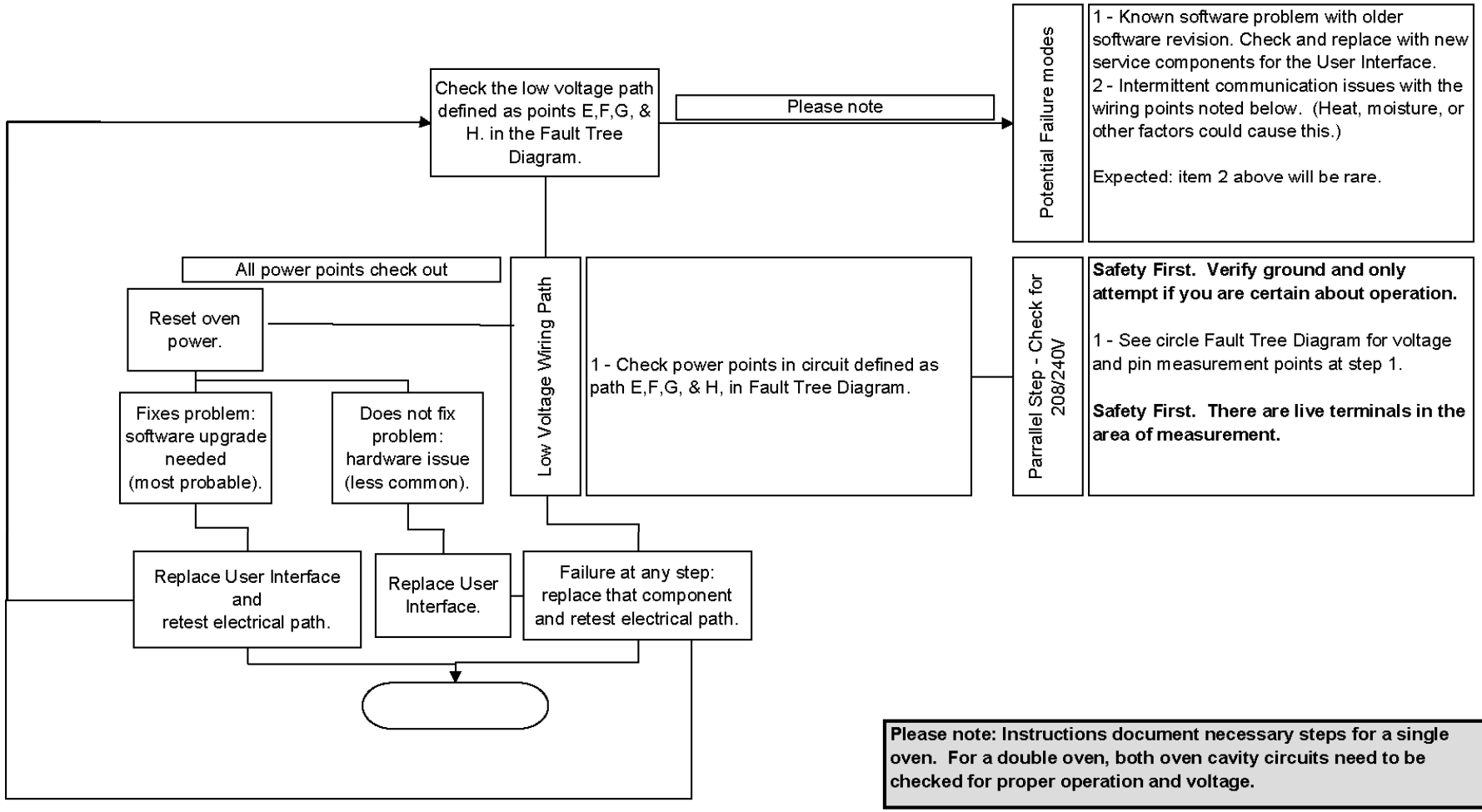
Failure at unit power up


Check the power to the unit (House Circuit).
No
Yes
Contact licensed electrician
Start checking wiring path inside unit.
Power Wiring Path
1 - Check wiring connection to the unit. Installation correct?
2 - Check that wiring is properly connected at the main terminal block.
3 - Check that the wiring connection from the terminal block to power supply board correct.
4 - If connections in this list are ok, go to next step.
5 - Check power path of the control at points A,B,C, & D.
Parrallel Step - Check for 208/240V
Safety First. Verify ground and only attempt if you are certain about operation.
1 - Check 208/240V applied to connections 1 and 2.
2 - Check 120V applied at step 3.
Low Voltage Wiring Path
1 - Check time sync signal between Control Module and User Interface. (See *Note on item C&D in the fault tree diagram for special considerations.)
If this voltage is steady and unchanging, disconnect User Interface and re-measure. If still steady, change the Control Module.
If steady when attached to the User Interface, change the User Interface.
Parrallel Step - Check for 208/240V
Safety First. Verify ground and only attempt if you are certain about operation.
1 - See circle Fault Tree Diagram for voltage and pin measurement points at step 1.
Safety First. There are live terminals in the area of measurement.
Reset oven power.
All power points check out
Fixes problem: software upgrade needed (most probable).
Does not fix problem: hardware issue (less common).
Replace User Interface and retest electrical path.
Replace User Interface.
Failure at any step: replace that component and retest electrical path.

Please note: Instructions document necessary steps for a single oven. For a double oven, both oven cavity circuits need to be checked for proper operation and voltage.

E005 cont'd

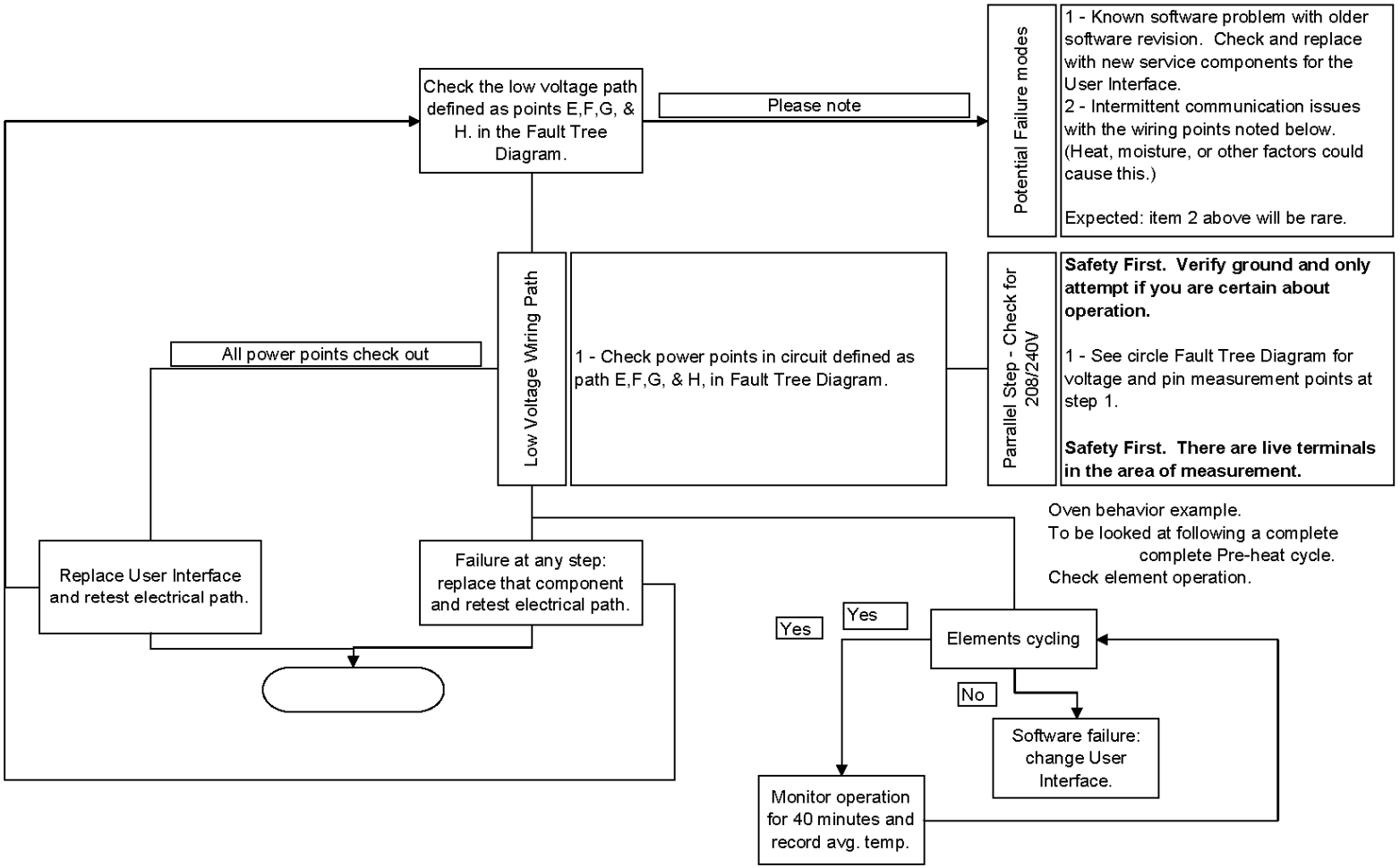
Failure During Operation: Assumes oven has been operating either in a heating mode or at a rest state with the clock displayed/operating as expected prior to the failure being noticed.


Check the low voltage path defined as points E,F,G, & H. in the Fault Tree Diagram.
Please note
Potential Failure modes
1 - Known software problem with older software revision. Check and replace with new service components for the User Interface.
2 - Intermittent communication issues with the wiring points noted below. (Heat, moisture, or other factors could cause this.)
Expected: item 2 above will be rare.
All power points check out
Reset oven power.
Low Voltage Wiring Path
1 - Check power points in circuit defined as path E,F,G, & H, in Fault Tree Diagram.
Parrallel Step - Check for 208/240V
Safety First. Verify ground and only attempt if you are certain about operation.
1 - See circle Fault Tree Diagram for voltage and pin measurement points at step 1.
Safety First. There are live terminals in the area of measurement.
Fixes problem: software upgrade needed (most probable).
Does not fix problem: hardware issue (less common).
Replace User Interface and retest electrical path.
Replace User Interface.
Failure at any step: replace that component and retest electrical path.

Please note: Instructions document necessary steps for a single oven. For a double oven, both oven cavity circuits need to be checked for proper operation and voltage.

Note : In most cases, when a voltage reset is made to the unit and the problem corrects, the issue can be traced to software.

OVEN DOES NOT RETAIN HEAT (HEATING TOO LOW): Oven pre-heats but does not maintain appropriate temperature.


Check the low voltage path defined as points E,F,G, & H. in the Fault Tree Diagram.
Please note
Potential Failure modes
1 - Known software problem with older software revision. Check and replace with new service components for the User Interface.
2 - Intermittent communication issues with the wiring points noted below. (Heat, moisture, or other factors could cause this.)
Expected: item 2 above will be rare.
Low Voltage Wiring Path
1 - Check power points in circuit defined as path E,F,G, & H, in Fault Tree Diagram.
Parrallel Step - Check for 208/240V
Safety First. Verify ground and only attempt if you are certain about operation.
1 - See circle Fault Tree Diagram for voltage and pin measurement points at step 1.
Safety First. There are live terminals in the area of measurement.
All power points check out
Replace User Interface and retest electrical path.
Failure at any step: replace that component and retest electrical path.
Oven behavior example.
To be looked at following a complete complete Pre-heat cycle.
Check element operation.
Yes
Yes
Elements cycling
No
Software failure: change User Interface.
Monitor operation for 40 minutes and record avg. temp.

Please note: Instructions document necessary steps for a single oven. For a double oven, both oven cavity circuits need to be checked for proper operation and voltage.

7.3 Testing

Test with wire harness off at pin header or with circuits open.

Plug	Pins	Operates	Explanation
X102 and X103	4, 5 2, 4	Upper oven double line break relay coil	No fail code. If double line break relay does not close, L2 (120 volts) will not reach upper oven bake, broil, convection elements.
X105	7	Upper door latch motor	Will accept all modes except self-clean. When oven set to self-clean, display will be on constantly, doors will not lock and self-clean will not start. E106 will appear.
X105	6	Upper oven convection motor	No fail code. Lower oven convection motor will not work.
X105	1	Rotisserie motor	No failure code. Rotisserie will not rotate.
X106	1 (common), 6, 7	Upper oven door latch	If latch position is not detected during normal operation, E124/126 will be displayed.
X107	4, 5	Upper oven sensor	Controls function normal. When sensor opens, E101 code will appear. If sensor shorts, E104 will appear. Cooling fan is on constantly.
X107 X207	1, 2, 3 1,4,5	Cooling fan motors	Will accept modes. In ~45 seconds, E118 will appear in upper oven display or E218 will appear in lower oven display when hall sensor does not detect fan rotation.
X202 and X203	1, 2 3, 5	Lower oven double line break relay coil	No fail code. If double line break relay does not close, L2 (120 volts) will not reach lower oven bake, broil, convection elements.
X205	6	Lower door latch motor	Will accept all modes except self-clean. When oven set to self-clean, display will be on constantly, doors will not lock and self-clean will not start. E206 will appear.
X205	1	Lower oven convection motor	No fail code. Lower oven convection motor will not work. Relay will snap closed.
X206	1 (common), 6, 7	Lower oven door latch	If latch position is not detected during normal operation, E224/226 will be displayed.
X207	3, 6	Lower oven sensor	Control functions normal. When sensor opens, E201 code will appear. If sensor shorts, E204 will appear. Cooling fan is on constantly.
X2		Sends display signal to display	Glass control panel is completely dead. 3-position connector (ground/voltage/data line) should measure 9.6 VDC.
X2		Sends communication signals to display	If no communication between electronic modules, E005 will display. Connector positions 1-2 should measure ~5 VDC.

Table 9 Troubleshooting

8 WIRING DIAGRAMS AND SCHEMATICS

The wire color key (Table 10) and element strip diagrams (Figures 23-24) are shown below. For schematics, please refer to the *Built-in Oven Service Guide* (Wiring Diagram) which can be found on *QuickFinder* or in the upper oven plenum, near the control module.

8.1 Wire Color Key

BK	Black	**BN**	Brown	**BU**	Blue
GN	Green	**OR**	Orange	**RD**	Red
VT	Violet	**WH**	White	**YE**	Yellow
BN/WH	Brown/White	**BU/WH**	Blue/White	**OR/BK**	Orange/Black
VT/WH	Violet/White	**YE/BK**	Yellow/Black		

Table 10 Wire color key

8.2 Strip Diagrams

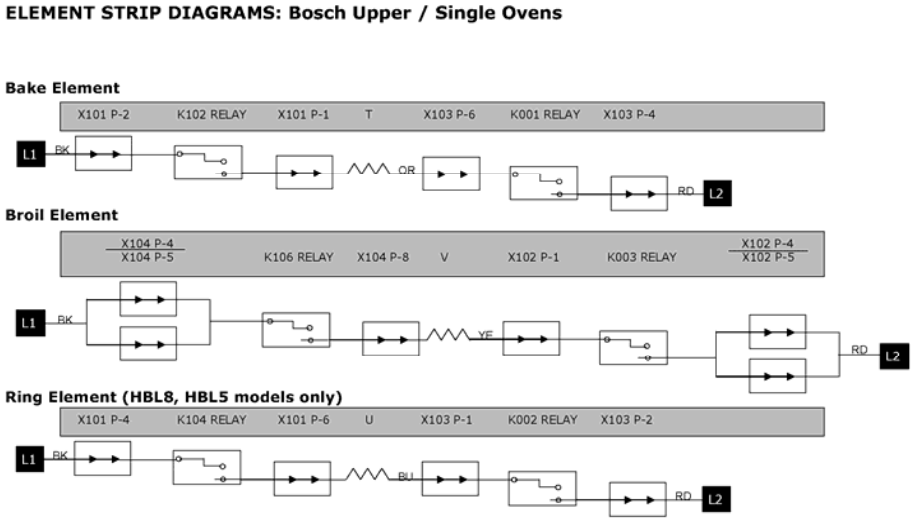


Figure 23 Upper (Cavity 1) / Single oven strip diagram

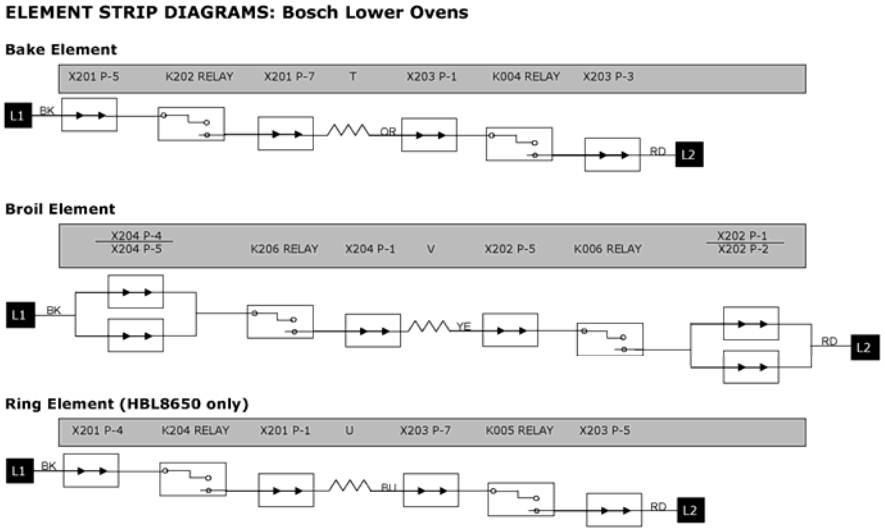


Figure 24 Lower (Cavity 2) oven strip diagram

9 ADDITIONAL REFERENCES

9.1 QuickFinder

For further information, please refer to the following documents on *QuickFinder*:

- Wiring Diagram (*Built-in Oven Service Guide*)
- *Installation Instructions*
- *Use and Care Manual*
- HMB8020/8050/8060 Convection Microwave *Use and Care Manual*
- HMB8020/8050/8060 Convection Microwave *Installation Instructions*
- HMB8020/8050/8060 Convection Microwave *Service Manual*
- HMB5020/5050/5060 Traditional Microwave *Use and Care Manual*
- HMB5020/5050/5060 Traditional Microwave *Installation Instructions*
- HMB5020/5050/5060 Traditional Microwave *Service Manual*

Exploded views, parts lists, and related service and parts notes are also available on *QuickFinder*. Visit http://portal.mch.bshg.com/portal.

> **NOTICE**
>
> Not all service parts are shown on the *QuickFinder* exploded views; review the parts list for additional information.

9.2 Technical Support

To reach Bosch technical support, call the toll free TechLine at

888 522-6724. Technicians are available to assist you Monday – Friday, between the hours of 5am and 5pm, Pacific Time.

Notes